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KEY TO PRONUNCIATION

For a full explanation of the various sounds indicated, see the KEY TO PRONUNCIATION in Vol. I.

æ as in ale, fate.
 â " " senate, chaotic.
 â " " glare, care, and as *e* in there.
 ã " " am, at.
 ä " " arm, father.
 á " " ant, and final *a* in America, armada, etc.
 α " " final, regal, pleasant.
 a " " all, fall.
 ē " " eve.
 ē " " elate, evade.
 ē " " end, pet.
 ē " " fern, her, and as *i* in sir, etc.
 e " " agency, judgment.
 i " " ice, quiet.
 i " " quiescent.
 i " " ill, fit.
 ò " " old, sober.
 ò " " obey, sobriety.
 ò " " orb, nor.
 ò " " odd, forest, not.
 o " " atom, carol.
 oi " " oil, boil.
 oo " " food, fool, and as *u* in rude, rule.
 ou " " house, mouse.
 ū " " use, mule.
 ũ " " unite.
 ũ " " cut, but.
 u " " full, put, or as *oo* in foot, book.
 ũ " " urn, burn.
 y " " yet, yield.
 B " " Spanish Habana, Córdoba, where it is like English *v* but made with the lips alone.

ch as in chair, cheese.
 d " " Spanish Almodovar, pulgada, where it is nearly like *th* in English then.
 g " " go, get.
 g " " German Landtag = *ch* in Ger. ach, etc.
 h " " *j* in Spanish Jijona, *g* in Spanish gila; like English *h* in hue, but stronger.
 hw " " wh in which.
 k " " *ch* in German ich, Albrecht = *g* in German Arensburg, Mecklenburg, etc.
 n " " in sinker, longer.
 ng " " sing, long.
 N " " French bon, Bourbon, and *m* in the French Étampes; here it indicates nasalizing of the preceding vowel.
 sh " " shine, shut.
 th " " thrust, thin.
 TH " " then, this.
 zh " " *z* in azure, and *s* in pleasure.

An apostrophe [*'*] is sometimes used as in tã'b'l (table), kãz'm (chasm), to indicate the elision of a vowel or its reduction to a mere murmur.

For foreign sounds, the nearest English equivalent is generally used. In any case where a special symbol, as *ç*, *h*, *κ*, *ñ*, is used, those unfamiliar with the foreign sound indicated may substitute the English sound ordinarily indicated by the letter. For a full description of all such sounds, see the article on PRONUNCIATION.

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- CONSUL, MERCANTILE.
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- CRIMEA.
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* Deceased.

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Professor John Merle Coulter.
- DICTIONARY.
Professor James C. Egbert, Jr.
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THE NEW INTERNATIONAL ENCYCLOPÆDIA

CONSUL (Lat.). The title given to the two chief magistrates established in Rome on the expulsion of the kings in 509 B.C. So violent was the hatred of the monarchy that the Romans were unwilling to intrust the new Republic to a single executive, but gave the entire administration to two consuls, of equal rank and jurisdiction, that each might check any tyranny on the part of the other. At first the entire power of the King, in state and church, at Rome and abroad, was vested in the two consuls, and each was wholly responsible for the acts of both; the acts of either, however, were nullified by the dissent of his colleague. Gradually their powers were limited, and many of their functions were given to other officials, such as the censors, the prætors, and the ædiles. They held office for one year only, and years were reckoned by their names. In the early days of the Republic one consul was generally commander in chief in the field, while the other remained to administer affairs at Rome; but often both were forced to lead the armies in battle. In such cases they commanded by turns, a day at a time. They presided at meetings of the Senate, at elections, and at the chief public festivals. Together with the Senate, they exercised a general supervision of the state. As a mark of their high office, they wore a white toga with a crimson border (*toga prætexta*), sat in public on the 'curule chair' (*sella curulis*), and were accompanied by 12 attendants (*lictors*) bearing the *fascēs* (q.v.).

The consuls were elected by the *Comitia Censuriata* (see *COMITIA*). In the earlier period the date of the election and of entering upon office was irregular and dependent on circumstances; but if convenient the election took place generally in July, and after 153 B.C. the consulship began regularly on January 1. At first only patricians were eligible to the office, and a consul could not be reelected. After a long struggle of the plebeians for recognition, it was established by the *Leges Liciniae Sextiae* (see *LICINIAN ROGATIONS*), in 367 B.C., that one of the consuls must be a plebeian. Meantime, between 444 and 367 B.C. the consulship was frequently suspended, and the military tribunate with consular power, an office to which plebeians could be elected, was substituted for it. In 342 B.C. both consulships were opened to the plebs by a popular vote, and it

was ordained that ten years must elapse before a consul could be eligible for reelection; however, it was not until 215 B.C. that two plebeian consuls were elected together, and one of these was quickly ousted. Not until 162 B.C. did the plebeians succeed in obtaining two effective consuls.

With the organization of the Empire by Augustus, the consulship ceased to be of real importance. In the division of functions between the Emperor and the senatorial body the consuls remained the head of the latter; but their nomination became a prerogative of the Emperor, and their election a farce. They still gave their names to the year, but the position was simply one of honor, so that we very often find several consuls named in succession in one year, the *eponymous* consuls holding office only for four, or even two, months, and then being replaced by others. The original pair were called *consules ordinarii*, their substitutes *consules suffecti*. Under the later Empire nothing but the name and the honor of the consulship remained. The Emperor Honorius was made consul in the very year of his birth! Official dating by the name of the consuls came to an end in 537 A.D. Consult: Mommsen, *Römische Staatsrecht*, ii (Leipzig, 1887-88); Daremberg and Saglio, *Dictionnaire des antiquités romaines*, vol. i (Paris, 1892); Pauly-Wissowa, *Real-Encyclopädie der classischen Altertumswissenschaft*, vol. iv (Stuttgart, 1901); Greenidge, *Roman Public Life* (London, 1901).

CONSUL, MERCANTILE. An agent appointed by one nation to reside within the territory of another for the special purpose of promoting commercial intercourse between them. The earliest prototype of this official is the ancient Greek *proxenus*, whose functions were to represent his country, and to protect its citizens while trading at the place of his residence. Modern Greek applies this term to the consul of to-day. That "consul" has superseded "proxenus" as the title of the international agent of commerce is due to the supremacy of Italian commerce in the Middle Ages. During that period Italian traders in a foreign country were accustomed to have their disputes settled by magistrates of their own upon whom they conferred the proud title of "consul." In 1485 Richard III appointed the first consul for English merchants (Lorenzo Strozzi, at Pisa), being moved thereto, it is said, "by observing

from the practice of other nations the advantage of having a magistrate for settling disputes among merchants trading in another country."

This judicial function of the early consul is maintained at present in certain Oriental and African countries. In other lands his primary duties are those of an international commercial agent. The exact nature of his activities and the manner in which he is to perform them are determined mainly by the government appointing him and by treaty with the power in whose territory the consular office is exercised.

The consular service of the United States embraces one consular agent and consul general (located at Cairo, and enjoying a quasi-diplomatic position), consuls general, vice consuls general, deputy consuls, consular agents, consular clerks, and office clerks, numbering, in 1913, about 1200 persons. The fees received by the consular offices, which under the Law of 1906 are covered into the Treasury, practically cover the expenses of the service. Under earlier laws all or part of the fees were retained by the consular officials. Thus the total income of the Consul at London, whose salary was fixed at \$5000, approximated \$20,000. The abolition of the fee system by the Law of 1906 was accompanied by an increase in salaries, especially in the Oriental consulates. The number of consulates general (January, 1914) is 67, and of consulates 235. The incumbents of these offices who receive salaries of \$1000 or over are not allowed to transact business in or with the countries to which they are accredited. Formerly a large proportion of the officials in the consular service were foreigners resident in the countries in which the consulates were established. The Law of 1906 required that all officials receiving salaries of \$1000 and over must be American citizens. All consuls are appointed by the President by and with the advice and consent of the Senate. They qualify by taking a prescribed oath of office, and by executing a bond to the United States for the faithful discharge of their duties and for accounting for, paying over, and delivering up all fees, money, goods, effects, books, records, papers, and other property coming to their hands. Upon filing the oath of office and the bond a commission issues, and a request is made by the State Department to the government within whose jurisdiction the office is situated for an exequatur, upon the receipt of which the consular officer is entitled to perform his functions and enjoy the privileges of his station. The exact extent of these privileges depends upon the conventions or treaties existing between the United States and the countries to which the consuls are accredited. In the absence of any convention, a consul, after receiving his exequatur, while not entitled to the exemptions of a diplomatic agent (see DIPLOMATIC AGENTS; ALIEN), is a recognized officer of a foreign state, under the special protection of international law; he may raise the flag and place the arms of the United States over his gates and doors, and his official papers and archives are exempt from seizure and destruction. While the duties of consular officers pertain chiefly to commercial transactions, they are not limited to them. These officers "stand as protectors and advisers of their countrymen present in foreign lands; they act as judges, notaries, administrators of interests and of all

property of such as have no legal representative; they have to prevent frauds on the revenue; to notice infractions of treaty stipulations relating to trade; to advise their government of new laws or regulations within their district; to preserve the discipline of the commercial marine; to guard seamen from oppression; to aid the destitute; and to make reports upon matters affecting commercial, industrial, financial, and agricultural pursuits."

Some of the specific duties of consuls included under these general duties are the arbitration of disputes between master and crew, the relief of destitute seamen, the care of property of their countrymen in case of shipwreck, etc., the issuing of passports, the authentication of documents, and the certification of marriages, births, and deaths. The consuls of the United States are expressly prohibited from performing the marriage ceremony, but the statutes provide that when a marriage is duly solemnized in accordance with the law of the country in which the consul resides, the consul shall, upon proper application, issue a certificate of such solemnization, provided such persons would have been authorized to marry if residing in the District of Columbia.

Ministers and consuls of the United States in China, Siam, and Madagascar have the judicial powers which are bestowed upon them by Chapter 47 of the Revised Statutes, including jurisdiction in criminal cases and in civil cases involving sums of \$500 or less. The *personnel* of the consular courts is specially determined, varying with the country and the subject matter under dispute, thus, in capital cases it is provided that the consul must sit with four of his countrymen as assessors, and that their verdict must be approved by the minister before conviction can be had; and in some countries provision is made for a consular mixed court consisting of natives of the country and of the United States. Consuls have the judicial powers above referred to also in Turkey so far as relates to crimes and offenses committed by citizens of the United States, and in civil cases where such powers are permitted by the laws of Turkey or its treaties with civilized nations or by its usages with the Franks or foreign Christian nations; and in Persia, as to suits and disputes between citizens of the United States. Special provisions exist granting special powers to the consuls of the United States in the Barbary States, Muscat, Samoa, and in some other places where treaty has provided for them. In China, Madagascar, Siam, Turkey, and other non-Christian countries the property of deceased persons, both real and personal, is administered under the probate jurisdiction of the consular courts of those countries. (The judicial powers of the United States Consul in Japan were terminated on July 17, 1899, by the treaty with Japan which took effect upon that date.) Provision is made for an appeal from the consular courts under certain conditions to the minister, and to the circuit courts of the United States. See EX-TERRITORIALITY.

In recent years many complaints have arisen as to the character of the American consular service, and several bills, having for their object the placing of the service under the merit system, have been introduced in Congress. One of these was the Lodge Bill, introduced in 1906. It was amended so as to eliminate the require-

ment of competitive examinations for entrance to the service; but in the form in which it became law it provided for classification of service on the basis of work performed, with a view to promotion for efficiency from the lower to the higher grades. This plan had already been introduced by executive orders of President Cleveland (1895) and President Roosevelt (1905). The expectation that through the chance of promotion a better class of men will seek consular office has to a considerable degree been realized. Permanence of tenure is necessary if candidates for the service are to equip themselves with sufficient technical information; and some assurance of such permanence of tenure is held out by the new law.

Consult: Warden, *On the Origin, Nature, Progress, and Influence of Consular Establishments* (Paris, 1813); Tarring, *British Consular Jurisdiction in the East* (London, 1887); the *Consular Regulations of 1896* (United States Public Document, Washington, D. C.); *House Report No. 562, Fifty-sixth Congress, First Session*; *Senate Report No. 1202, Fifty-sixth Congress, First Session*.

CONSULATE (Fr. *consulat*). The form of government in France from 1799 to 1804. After the sudden overthrow of the Directory on the 18th Brumaire (Nov. 9, 1799), the members of the Council of Ancients and the Five Hundred, or rather such of them as approved of that act of violence on the part of Bonaparte, appointed three consuls—Sieyès, Bonaparte, and Roger Ducos. Sieyès and Ducos were quietly got rid of by pensions, and Cambacérès and Lebrun took their places. This approach to a monarchical government was confirmed, Dec. 24, 1799, by the Constitution of the Year VIII, by which Bonaparte was made First Consul. The consuls were elected by the Senate for 10 years and were eligible for reelection. There was a Conservative Senate (*sénat conservateur*) of some 60 members appointed for life, a Tribunal of 100 members, and a Legislative Assembly of 300, but their powers were very limited, while those of the First Consul were made almost absolute. He promulgated laws and appointed or dismissed ministers, ambassadors, members of the Council of State, military and naval officers, and all civil and criminal judges, excepting justices of peace and members of the Court of Cassation. Bonaparte at once took up his residence at the Tuileries and held a splendid court. In May, 1802, he was reelected for 10 years, and in August of the same year was made First Consul for life. Nothing but the Imperial name and insignia was wanting to complete the picture of absolutism, and these were supplied, May 18, 1804, when Napoleon was made Emperor. Consult: Hélice, *Les constitutions de la France* (Paris, 1875-80); Thiers, *Histoire du consulat et de l'empire* (Paris, 1845-62); and the various lives of Napoleon, the memoirs of the time, and general histories. See FRANCE; NAPOLEON I.

CONSULATE OF THE SEA. See CONSO-LATO DEL MARE.

CONSUMERS' LEAGUE. An "association of persons who desire, so far as possible, to do their buying in such a way as to further the welfare of those who make or distribute the things bought." The movement started in England in 1890. About the same time the Working Women's Society of New York was investigating the condition of women and cash

girls in the stores of that city. They called a public meeting in May, 1890, to ask the help of consumers in bettering these conditions, and as a result the Consumers' League of New York was formed in January, 1891. Similar leagues have since been organized in almost all the important cities of the United States. The leagues have been especially active in their efforts to improve the conditions of employment of workers in retail establishments, but wherever practicable they extend their activities to manufacturing as well. The leagues, according to the needs of their respective cities, draw up lists of conditions which a store must maintain in order to be called a "fair house." These include, as a rule, a minimum standard of wages, reasonable hours of employment, freedom from arbitrary exactions in the way of fines, etc., adequate provision for the employee's health and comfort while at work. Further conditions, designed to safeguard the public health, are frequently made, such as the proper protection of food exposed for sale from dust, etc. Stores which fulfill the conditions prescribed are placed on a "white list" and not only members of the league, but the general public as well, are urged to patronize such stores.

The promoters of the league soon found that its work must be extended to reach the makers of goods, both to improve their conditions and to protect the purchaser, who had no way to distinguish between factory-made goods and those made or finished in sweat shops. Accordingly the National Consumers' League was organized in 1899 with Mrs. Florence Kelley, who had been a successful factory inspector in Illinois, as secretary. In order to identify the factory-made article a "consumers' label" was adopted, which can be placed on goods made in factories maintaining the following conditions: (1) compliance with State factory law; (2) the manufacture of the goods on the premises; (3) no child under 16 employed; (4) a 10-hour day; (5) permission given for inspection by a representative of the league. The National League has provided for the education of purchasers through lectures, the distribution of literature, and organization. The State leagues use similar methods. While the membership of these leagues has nowhere become so great as to have a perceptible control over the sales of any business of extensive proportions, their indirect influence, through the creation of public sentiment, has been very considerable. One of the most noteworthy achievements of the leagues has been the fixing of the attention of the public upon the overwork from which the employees of stores suffer just before Christmas. In many cases the evils of evening selling have been mitigated, and in some cities the stores have been closed, by mutual agreement, on Christmas Eve, instead of remaining open until late at night, as formerly. The Consumers' Leagues have also exercised a considerable influence upon the course of labor legislation.

Bibliography. Brooks, *The Consumers' League Reports* (New York, 1896 et seq.); Lowell, *Consumers' League* (ib., 1896); Kelley, *Some Ethical Gains through Legislation* (ib., 1905); *American Journal of Sociology*, vol. v (Chicago, 1901); *Annals of American Academy Bulletin*, N. S., No. 5 (Philadelphia, 1898); *Reports of national and State leagues.* Literature may

be obtained at the office of the National Consumers' League, 105 East Twenty-second Street, New York.

See FACTORY INSPECTION; SWEATING SYSTEM; UNION LABEL.

CONSUMPTION (Lat. *consumptio*, a consuming, from *consumere*, to consume, from *com-*, together + *sumere*, from *sub*, under, *emere*, to buy). One of the traditional divisions of political economy. J. B. Say, the earliest systematizer in the science, devotes a book to consumption, following books on production and distribution. Say's treatment of consumption is, however, little more than an analysis of the possible effects of productive and unproductive consumption and of public expenditures, which he treats under this head. The classical school generally followed Say in the order of divisions, but, in consequence of the exclusion of public expenditures, often left the division "consumption" with scarcely any other content than a discussion of luxury.

The marginal-utility school placed a new emphasis on consumption, through their derivation of value from utility, or want-satisfying power. The law of the declining scale of satisfaction is essentially a law of wealth consumption. The phenomena of varying elasticity of wants, of the search for variety in satisfaction, of the reinforcing of satisfactions through complementary relations, are further examples of principles derived from consumption serving important theoretical purposes. The general principles derived from investigations of family budgets, such as those of Ducpétiaux and Engle (q.v.) and those of the United States Department of Labor, are properly treated as inductive principles of consumption. Under the same head are to be classed investigations of the minimum wage and of the standard of living (q.v.). The social laws of consumption, as exemplified in imitation (fashion) and desire for distinction in dress, housing, etc., have usually been treated in cursory manner, but have served as a basis for illuminating studies by Sombart and other economists. In America especial stress has been laid upon the study of consumption by Prof. S. N. Patten (q.v.). While the importance of the study of consumption is generally admitted, no thoroughly satisfactory treatise covering the whole field has been written. The most systematic work on the principles of consumption has been done by Cuhel, *Zur Lehre von den Bedürfnissen* (Innsbruck, 1907), and Brentano, *Versuch einer Theorie der Bedürfnisse* (Munich, 1908). The most suggestive examples of the application of the principles of consumption to the problems of progress are found in Patten, *Theory of Prosperity* (New York, 1902), and Sombart, *Der moderne Kapitalismus* (Leipzig, 1902). See POLITICAL ECONOMY.

CONSUMPTION. See TUBERCULOSIS.

CONTACT (Lat. *contactus*, from *contingere*, to touch, from *com-*, together + *tangere*, to touch). In geometry, two lines, of which one at least is curved, are said to be in contact when they have two or more consecutive points in common. For example, in analytic geometry a tangent is said to be in contact with a circle in two consecutive points. This is called contact of the first order. If two curves have contact at three consecutive points, the contact is said to be of the second order, and so on;

e.g., the curves $y = x^2$ and $y = 3x^2 - 3x + 1$ have contact of the second order. The analytic condition for contact of the first order at a point $x = a$, between two curves, $y = \phi(x)$, $y = \psi(x)$, is that $\phi(a) = \psi(a)$, $\phi'(a) = \psi'(a)$, ϕ' and ψ' being the first derivatives. The condition for contact of the second order is that $\phi(a) = \psi(a)$, $\phi'(a) = \psi'(a)$, $\phi''(a) = \psi''(a)$. Contact of the third order requires the derivative of the third order, and so on. In contact of the n th order between two surfaces there must be $(n + 1)$ consecutive common points.

CONTACT ACTION, CHEMICAL. See CATALYSIS; REACTION.

CONTACT DEPOSITS. See ORE DEPOSITS.

CONTA'GION (Lat. *contagio*, contact, from *contingere*, to touch, from *com-*, together + *tangere*, to touch). The communication of a disease from the sick to the healthy, either by direct contact of a part affected with the disease, or by indirect contact through the medium of the excretions and exhalations of the body. Among the contagious diseases are measles, scarlet fever, smallpox, erysipelas, typhus fever, bubonic plague, epidemic influenza (the grippé), diphtheria, and tuberculosis. See BACTERIA; EPIDEMIC; INFECTION.

CONTAGIOUS ABORTION IN ANIMALS. This disease has been increasing in importance economically until it now ranks second only to tuberculosis among the diseases of cattle. In the United States alone the direct loss among dairy and range cattle reaches into the millions, while the potential loss is enormous and inestimable. While most frequent among cows, the disease is commonly met with in mares and less often in sheep, goats, and swine. It occurs in otherwise healthy mothers as a result of external infection, producing inflammatory lesions of the fetal membranes and cotyledons, usually appearing in an enzootic form. In the cow it is caused by the *Bacillus abortus*, commonly known as "Bang's bacillus," and in the mare by the *Bacillus abortivus equinus*, and possibly other microorganisms.

Premonitory symptoms when present are manifested two or three days before the expulsion of the fetus by swelling of the udder, edematous swelling of the vulvar lips, reddening of and small inflamed nodular formations on the vulvovaginal mucosa, and the appearance of a mucous or mucropurulent odorless discharge from the vagina. In cows abortion seldom occurs before the fourth month of pregnancy, but may occur at any time after that period. The fetus is expelled with ease and is usually dead at birth. If abortion occurs at the end of six months, the young may be alive, but lives only a few hours. Mares abort between the fourth and the eighth month of gestation.

If an aborting cow is placed in a herd which has hitherto been healthy, an outbreak of abortion may occur. Bulls that have served aborting cows transmit the disease to other cows. In general, the microorganisms to which the disease is due are found in the male and female genital organs and on the afterbirth from aborting animals.

The bacillus has the udders of apparently healthy cows as its normal habitat and may be eliminated continuously for years in the milk of infected cows that no longer abort.

The treatment for this disease includes isolation of affected animals and the application of thorough antiseptics. In case of an outbreak

of abortion the fœtus and fetal membranes from aborting animals should be burned or deeply buried, the posterior parts of the animals should be washed in some antiseptic solution, repeated antiseptic vaginal douches should be given, and the stable should be thoroughly disinfected. In order to prevent the possible spread of the infection, the posterior parts of other cows or mares in the same stable should be carefully washed with a solution of lysol, creolin, potassium permanganate, or corrosive sublimate. Solutions of carbolic acid and of methylene blue, preferably administered by mouth, have been found to have valuable curative effects.

Noncontagious abortion is occasionally met with among farm animals, there being a number of conditions which may cause it. A general cachexia or anæmia may be among the predisposing causes of abortion; and among other conditions and causes which may lead to abortion mention should be made of acute diseases of the vital organs, contagious fevers, chronic diseases of the abdominal organs; diseases of the ovaries, kidneys, or bladder; diarrhœa; fatty degeneration of the heart; ingestion of large quantities of cold water; various forms of indigestion, especially those which are accompanied by the formation of gas in the stomach; imprudent feeding with succulent forage in large quantities, such as roots, potatoes, apples, pumpkins, ergotized grasses, sweaty or rusty grains and grasses; mechanical injuries; standing in stalls with too great a backward slope; nervous excitement, and muscular strain. Consult: *Report Bureau of Animal Industry, United States Department of Agriculture for 1911*; Hutyra and Marek, *Pathology and Therapeutics of Diseases of Domestic Animals*, vol. i; Hoare, *System of Veterinary Medicine*, vol. i.

CONTAGIOUS DISEASES. The law takes cognizance of contagious and infectious diseases as they menace the public health, for the protection of which health and quarantine laws are enacted under the broad authority of the police power of the state. For purposes of administration, this power may be delegated to municipal corporations or like political subdivisions.

While the right to take summary measures for the public safety is one of the most ancient of government prescriptions and is rarely challenged, yet it is none the less formidable, inasmuch as it involves the power of the state forcibly to confine those suffering from infectious diseases, even where properly cared for by friends or relatives, and other like interference with the personal rights of liberty and property. Maritime quarantine was early practiced by the commercial nations, and was enforced by the Venetians in the fifteenth century; but municipal health regulation is of somewhat later development, and the two are still usually separated in administration. Thus, e.g., the Board of Health of the City of New York exercises jurisdiction within the city proper and upon the waters of the bay to the limits of quarantine, which, with its shipping, is under the authority of the Board of Quarantine Commissioners and the health officer of the port. In the United States the enactment of quarantine laws is held to be among the powers preserved to the States under the Constitution. Under their authority State boards of health are created and general statutes passed delegating the power to local boards in cities, towns, and

villages. Violations of the sanitary code are usually made misdemeanors and punished by imprisonment or fines. For the purpose of avoiding any questions that might arise from the possible interference of local regulations of the public health with the Federal prerogative of regulating interstate commerce, Congress early passed acts adopting such State laws and requiring their observance by Federal officials (Act of Feb. 25, 1799; Act of April 29, 1878 [20 Stat. L. 37]). In 1879 a National Board of Health was created, but its powers were little more than advisory, and by the Act of Congress, Feb. 25, 1893 (27 Stat. L. 449), it was abolished and its powers and duties transferred to the Marine Hospital Service, which, under the direction of the Secretary of the Treasury, performs the functions of national quarantine. Questions pertaining to the people at large arising from immigration and importation belong to Federal jurisdiction as incidental to the constitutional right of regulating commerce. Thus conditions of entry are imposed, such as detention, inspection, and disinfection, and under the Act of 1893 protective restrictions may even be laid upon interstate intercourse where a danger is threatened and State authority is wanting or lax. The Federal quarantine may arrest the entrance of forbidden persons or things; but once past the "Barge Office" or customhouse, the local authorities take jurisdiction. Naval vessels as well as commercial are bound to observe quarantine rules.

In Great Britain a similar system of sanitary protection prevails. In England the controlling statute, the Public Health Act (38 and 39 Vict. c. 55 [1875]), is comprehensive in its provisions and regulations, though it does not extend to Scotland or Ireland, or, except as to special provisions, to the city of London. The Infectious Disease (Notification) Act (52 and 53 Vict. c. 72) and the Infectious Disease (Prevention) Act (53 and 54 Vict. c. 34), as the titles signify, provide respectively for the course to be pursued in notifying the proper authorities in cases of defined contagious illness, and the regulations to be adopted in the way of inspection and disinfection to prevent infection. The first applies to the United Kingdom, and may be adopted by urban and rural authorities of ports and local districts; the second is confined to England.

In its international aspect the obligation resting upon a state to adopt proper regulations to prevent the spread of epidemics belongs to the so-called natural duties rather than the more defined and absolute principles of international jurisprudence. But with the increase of international intercourse and the development of a more sensitive national conscience, a demand has arisen among civilized nations for the recognition of the right to such protection by another state, as well as the long-established one of surrounding itself by defensive barriers. The United States, Great Britain, Germany, and other countries, have provided for inspection of meats and like food exports. In 1879 Sir Shenstone Baker prepared a Code of International Quarantine, which was approved by the United States. Consult Lumley, *The Public Health Acts* (London, 1902). See **QUARANTINE: POLICE POWER.**

CONTARINI, kôn'tà-rē'né. The name of a distinguished Venetian family, one of the 12 that elected the first Doge. Between 1043 and

1684 eight doges were furnished by this family, and several of its members were men of note.—DOMENICO, Doge in 1043–70, was the first of the family to be invested with that dignity; during his reign the rebuilding of St. Mark's Church was begun.—ANDREA, Doge in 1368–82, terminated the long war between Venice and Genoa by defeating the Genoese fleet at Chioggia. His return from this expedition was depicted by Paolo Veronese by order of the Republic.—AMBROGIO was Ambassador of Venice to Persia in 1473–77 and gave an account of his travels, published in Venice (1487).—GASPARO (1483–1542), Cardinal and diplomatist, went as Venetian Ambassador to the Diet of Worms in 1521, thence accompanied Charles V to the Netherlands, England, and Spain, and in 1523 concluded the Emperor's alliance with Venice. In 1535 he was made Cardinal by Pope Paul III, and as Papal Legate to the Diet of Ratisbon, in 1541, made the most extensive concessions to the Protestants, endeavoring to bring about a reconciliation with the Catholic church. Of his earnest efforts to introduce sweeping reforms in the latter, his *Consilium de Emendanda Ecclesia* (1537) is sufficient proof. The best known of his other writings is *De Magistratibus et Republica Veneta* (1543).—GIOVANNI (1549–1605) was a painter of the Venetian school, who formed himself chiefly after the works of Titian and Palma the Younger. Called to Vienna by Emperor Rudolph II, he painted many portraits, but he is more noted for his historical compositions, among which are "The Doge Marino Grimani Adoring the Virgin," "Conquest of Verona by the Venetians," both executed for the Doge's Palace in Venice; and "Baptism of Christ." Consult Romanin, *Storia di Venezia* (10 vols., Venice, 1853–61); for Ambrogio's journey, *Hakluyt Society Publications*, No. 49 (London, 1873); for Gasparo, Brown, *Studies in Venetian History*, vol. ii (ib., 1907), and *Regesten und Briefe des Cardinals Gasparo Contarini* (Braunsberg, 1881).

CONTARINI FLEM'ING. A romance by Benjamin Disraeli (1832).

CONTÉ, kōn'tā', NICOLAS JACQUES (1755–1805). A French chemist and inventor, born at Aunou-sur-Orne (Orne). He was at first a painter, but afterward turned to the mechanical arts, and, when France was deprived, through war with England, of its plumbago supply, invented a substitute in the shape of a mixture of graphite and clay. This substance he utilized for the manufacture of black-lead pencils, known as *crayons Conté*, by a process since followed in making all pencils. He also made extensive researches concerning the military aërostat, became director of the aërostatic school at Meudon, and was appointed by Napoleon chief of the aërostatic corps of the French army of invasion in the Egyptian expedition. During that expedition his inventive genius proved to be of great service; for, after the reverse at Aboukir, the revolt at Cairo, and the consequent loss of instruments and supplies, he directed the manufacture of cloth, surgical instruments, bread, arms, ammunition, and other necessities. He also devised (1798) a barometer, similar to the later one of Vidi. In 1802 he assisted in founding the Society for the Encouragement of National Industry, and was appointed to superintend the publication of the commission's great work on the Egyptian expedition. At the time

of his death he was constructing an engraving machine with which he hoped to do this work. Consult Jomard, *Conté, sa vie et ses travaux* (Paris, 1852).

CONTEMPORANEITY (from Lat. *contemporaneus*, simultaneous, from *com-*, together + *tempus*, time). A term used in geology to imply that two formations were deposited during the same period of time. This does not necessarily mean that they must contain the same fossil species, nor is it likely that they will, except when the two areas of deposition are in the same basin. The term "contemporaneity" is sometimes confused with *homotaxy*, which means that certain formations occupy the same relative positions with respect to the development of life forms. Thus, certain formations of the Devonian in Europe and North America might show similar faunas, but not have been deposited at exactly the same time. They would be homotaxial. See GEOLOGY.

CONTEMPT' (Lat. *contemptus*, from *contemnere*, to despise, from *com-*, together + *tennere*, to despise). In law, any disobedience of, or disrespectful or disorderly conduct in the presence of, any court or legislative body. It is punishable because it tends to impair the dignity, power, and authority of such bodies, and thus interfere with the administration of the law, and generally the body concerned has an inherent power summarily to impose upon the offender a penalty of fine or imprisonment, or both. All courts have such power. The guilty person may usually have these penalties remitted by "purging" the contempt; i.e., by making pecuniary reparation, as far as possible, for any damage caused by his acts and apologizing for his fault. If satisfactory, an order or minute is then entered reciting that this has been done and directing that the culprit be relieved from the penalty. The power to punish as contempt any willful misconduct committed in the presence of the court, which was an ordinary incident of common-law procedure, received a great extension in the process for enforcing the decrees of the courts of equity, or chancery. "Equity acts in *personam*," i.e., its judgments, as distinguished from those of the common law, are orders or decrees directing specified persons to do or to refrain from doing certain acts. The breach of such an order, though committed out of court, as must usually be the case, is a contempt and the ordinary process of the equity tribunals is to punish such an act of disobedience by imprisonment. It is this use of the jurisdiction of punishing for contempt in labor disputes that has been under fire in recent years, under the name of "government by injunction," as an arbitrary method of dealing with offenses prohibited by judicial order and as subjecting offenders to the penalty of imprisonment without trial by jury and the other safeguards of the ordinary criminal law. Consult Rapajje, *Treatise on Contempt* (New York, 1884), and Oswald, *Contempt of Court, Committal, and Attachment, and Arrest upon Civil Process* (London, 1895).

CONTEMPT OF PARLIAMENT. See PARLIAMENT.

CONTES À NINON, kōnt zā nē'nōn' (Fr., Ninon stories). A collection of short stories by Emile Zola, which were collected and published in 1864, when their author was only 24 years old. It was his first important work and has been deemed by some critics his best

book of short stories, being free from the exaggerations and brutalities which marked many of his later writings. In 1874 he published *Nouveaux contes à Ninon*.

CONTES DE MA MÈRE L'OYE, kônt de mâ mâr lwâ (Fr., stories of my Mother Goose). A famous collection of fairy tales by Charles Perrault (1697), purporting to be written by his 10-year-old son. The stories are taken from popular tradition and are told in simple, childish language, which has made them very successful among children for 200 years.

CONTES DES FÉES, dà fâ (Fr., stories of the fairies). A collection of fairy stories from various sources by the Comtesse d'Aulnoy (1710), in which many of the tales received their literary form in French.

CONTES D'HOFFMANN, Les (Fr. tales of Hoffmann). An opera by Offenbach (q.v.), first produced in Paris, Feb. 10, 1881; in the United States, Nov. 14, 1907 (New York).

CONTES DRÔLATIQUES, drô'lâ'ték' (Fr., droll stories). A series of 30 tales by Balzac, abounding in Rabelaisian humor and copying the style and spelling of the sixteenth century. They were published variously in 1832, 1833, and 1837.

CONTES DU LUNDI, du län'dé' (Fr., Monday stories). A collection of short stories by Alphonse Daudet (1873).

CONTI, kôn'té'. The house of Conti was a younger branch of the house of Bourbon-Condé. (See CONDÉ.) It first appears in French history in the sixteenth century, when François, son of Louis de Bourbon, first Prince of Condé, took the name of Marquis de Conti from his mother's fief of Conti-sur-Selles, in Picardy. Towards the end of the century he was made Prince of Conti. He died without heirs in 1614, and for 16 years the title was in abeyance. In 1629 it was bestowed upon the infant Armand de Bourbon, second son of the Prince of Condé. This second Prince de Conti is generally regarded as the founder of the house. His son, Louis Armand, Prince de Conti, succeeded him, and on his death, in 1685, left the title to his younger brother, François Louis (1664-1709), who styled himself Prince de la Roche-sur-Yon et de Conti and was the most noted member of the family. He had been educated under the eyes of the great Condé and embraced a military career with enthusiasm. He served in Hungary against the Turks, but, owing to incautious letters which he wrote home, he lost the favor of Louis XIV and on returning was banished to Chantilly. Pardonned through the intercession of the great Condé, the Prince served with distinction under the Duke of Luxembourg and was present at the battle of Steenkerk (1692) and Neerwinden (1693). In 1697 he was put forward by Louis XIV as a candidate for the Polish crown and was in fact elected King by a part of the nobles, but found himself powerless against the opposition of Russia, the Emperor Leopold I, and the Pope, and abandoned his claim. Louis XIV was never his friend and feared Conti's popularity, so that the Prince spent his later life in retirement. In 1709, however, he was summoned to take command of the Army of Flanders, but was carried off by an attack of the gout, Feb. 22, 1709. Massillon pronounced his funeral oration, and Saint-Simon, in his memoirs, speaks of him in glowing terms. His son was a worthless rōué

of the time of the Regency; but his grandson, Louis François (1717-76), Prince de Conti, distinguished himself as a brave and popular commander. The last member of the house was Louis François Joseph (1734-1814), Prince de Conti, son of the preceding, who after a somewhat checkered career died at Barcelona. Consult: Martin, *Histoire de France*, vols. ix, x, xi (Boston, 1864-66); *Mémoires* of Fontenay-Mareuil, La Rochehoucauld-Doudainville (Paris, 1861-64), and Saint-Simon (London, 1889); Topin, *L'Europe et les Bourbons* (Paris, 1868); *Mémoires* of Noailles (ib., 1777); D'Argenson, *Mémoires* (London, 1893); Bernis, *Mémoires* (Paris, 1878); De Broglie, *Le secret du roi* (ib., 1879).

CONTI, AUGUSTO (1822-1905). An Italian philosophical writer, born near San Miniato in Tuscany. He studied law at several Italian universities and practiced in Florence until 1848, when he enlisted as a volunteer for service against Austria. Subsequently he practiced law and taught philosophy in San Miniato, in 1855 was made professor of philosophy in Lucca, in 1863 professor of the history of philosophy in Pisa, and in 1864 professor of mental and moral philosophy in Florence. His published works include: *Evidenza, amore e fede, o i criteri della filosofia* (1862, and subsequent editions); *Storia della filosofia* (1864, and subsequent editions); *L'Armonia delle cose* (2 vols., 1878); *Filosofia elementare* (1869; 9th ed., 1879); *Dio come ordinatore del mondo* (1871); *Il vero nell'ordine* (1876; 2d ed., 1891). In these and other works Conti makes an earnest attempt to bring into agreement the teachings of different philosophical schools.

CONTI, NICCOLÒ DEL. An Italian traveler of the fifteenth century. He learned Oriental languages and carried on an extensive traffic in the East. He traveled in Egypt, Arabia, Persia, and India, and later gave a complete account of his travels to Poggio Bracciolini, secretary of Pope Eugenius IV. Poggio's manuscript relating the observations and adventures of Conti was first published in 1723, under the title *Historia de Varietate Fortunæ*. Conti was one of the pioneers of European commerce in the East, and one of the first to advocate the idea of finding a western way by sea to the Eastern countries. Consult Giardina, *I viaggi di Niccolò dei Conti* (Catania, 1898).

CONTINENT (ML. *continens*, from Lat. *continere*, to touch, from *com-*, together + *tenere*, to hold). The largest natural land division, of greater area than an island or peninsula. The outer portion of the earth is composed of two layers—the solid rocky crust, or "lithosphere," and the water areas, or "hydrosphere." In the early period of its history the earth may have been surrounded entirely by the hydrosphere, but at present and, so far as known, in all geological ages, the crust has been folded into mountain chains, forming nuclei around which the continental land areas are grouped, while the waters have accumulated in the intermediate depressions. Geographers usually recognize as continents Eurasia (comprising Europe and Asia), Africa, Australia, North America, and South America; the two Americas, however, are sometimes grouped as a single continent, although such a classification is hardly justifiable unless Africa be included with the Eurasian continent. A sixth continent is probably represented by the land areas in the Antarctic

region (q.v.). It is estimated that the land constitutes about 55,000,000 square miles, or 28 per cent of the entire surface of the earth. The continents vary widely in form, area, relief, and distribution on the globe, yet they may have many features in common. Usually the regions of greatest elevation are found in the interior, while along the coast line there is a gentle slope outward which, continued beneath the sea, forms a slightly submerged land strip called the "continental shelf." On the seaward edge of the shelf the slope is very rapid down to the great depths of the sea. The average altitude of the continents, according to the calculations of Lapparent, Murray, Penck, Supan, and Heiderich, is shown below:

ESTIMATED AVERAGE ELEVATIONS OF THE CONTINENTS

CONTINENT	Lapparent	Murray	Penck	Supan	Heiderich
Europe	958	938	918	951	1,230
Asia	2,883	3,188	3,116	3,084	3,018
Africa	2,007	2,020	2,132	2,034	1,975
Australia	1,188	803	918	853	1,542
North America	1,953	1,886	1,968	2,001	2,723
South America	1,762	2,077	2,067	2,001	2,493

Between the form and distribution of the continents many interesting comparisons may be drawn. The two Americas, comprising the greater part of the land area in the New World, are triangular in shape, the apex of the one lying in the Isthmus of Panama and the apex of the other being represented by Cape Horn. Both continents are bounded on the west by a long mountain system, and both have a region of lower elevation in the eastern portion. The Old World, on the other hand, is composed of a single triangular land area which has its base on the Arctic Sea and its apex at the Cape of Good Hope. Here the main trend of the mountain chains is east and west. In general, the continents that extend into or lie within the Southern Hemisphere—South America, Africa, and Australia—are most regular, contrasting strongly in this particular with North America and Eurasia in the Northern Hemisphere. The northern continents have a wider extension from east to west than the southern, and are further characterized by a great group of islands lying along the southeastern coast.

That the great land areas are not stable either as to form or elevation may be regarded as established beyond doubt by geological evidence. Moreover, certain coastal regions are known at the present time to be undergoing changes of level by which land emerges above or sinks below the sea. The extent of these oscillations in past ages can only be conjectured. Lyell's theory that there has been a constant interchange between the land and water areas has been objected to on the ground that there is no evidence that the abyssal depths of the ocean have ever been elevated; for the existence of any considerable deposits abyssal in character and containing a deep-sea fauna has not been conclusively established within the interior of the continents. The changes of level between the land and the sea take place very slowly, and may be caused either by gradual vertical movement of the land area or by variations in

the level of the ocean itself. Geologists generally agree that the positions of the present continents were determined as far back as Archean times. The Laurentian plateau of North America, the Brazilian highlands of South America, and the Scandinavian peninsula and Lapland in Europe are composed of crystalline rocks, and except on the margins they are bare of all sediments. These primitive lands were extended in area by the deposition of sedimentary strata on their borders, and by great upheavals accompanied by foldings of the crust into mountain ranges.

The evolution of the continental lands can be studied only tentatively, and is largely conjectured from the evidence afforded by the characters of the fauna and flora that lived in past ages. During the Cretaceous and Tertiary times the animal and plant life of South America, South Africa, and India were strikingly similar, while there was also a uniformity between the life forms of Europe and North America. This circumstance can best be explained by the assumption that in these periods the continents had an east and west trend, so that Brazil, Central Africa, and lower India were united by one broad land strip, and eastern Canada with Europe by another. Between the northern and southern continents an ocean basin extended from the isthmus of Central America eastward to the Indian Ocean, or nearly at right angles to the basin now occupied by the Atlantic. The changes by which the continents assumed their present form took place gradually and were accomplished by a slow depression of portions of the land and by encroachment of the sea. It is probable that certain regions for a long time remained above sea level as large islands, the unsubmerged remnants of which still exist, e.g., in the Cape Verde and Canary islands, in the British Isles, and in Madagascar. These changes were doubtless completed before the appearance of mankind; at least within historical times, so far as is known, there has been no marked alteration in the form of the continents.

Bibliography. Suess, *Das Antlitz der Erde* (Leipzig, 1885-1900); Eng. trans., *The Face of the Earth* (Oxford, 1904-09); Neumayr, *Erdgeschichte* (Leipzig, 1895); Mill, *The Realm of Nature* (New York, 1895); Mill, *The International Geography* (ib., 1900). See GEOLOGY; GEOGRAPHY; AMERICA; EUROPE; ASIA; AFRICA; AUSTRALIA; ANTARCTIC REGION.

CONTINENTAL CONGRESS. See UNITED STATES.

CONTINENTAL SYSTEM. The name given to the commercial policy adopted by Napoleon for the purpose of shutting England out from all connection with the continent of Europe, and thus compelling her to acknowledge the maritime law as established at the Peace of Utrecht. This system began with Napoleon's famous Berlin Decree of Nov. 12, 1806, which declared the British Isles in a state of blockade and prohibited all commerce or correspondence with them; every Englishman found in a country occupied by French troops or by their allies was declared a prisoner of war; all merchandise belonging to an Englishman was made lawful prize; and all trade in English goods was entirely prohibited. No ship coming directly from England, or from a British colony was allowed to enter any port; and any ship seeking by false declarations to evade this regulation was confiscated with its cargo as if British property.

England was not long in making reprisals. By an Order in Council, Jan. 7, 1807, all neutral vessels were prohibited from trading from port to port within France or any country in alliance with it or under its control. Every neutral vessel violating this order was to be confiscated with its cargo. Napoleon responded by a decree dated Warsaw, Jan. 25, 1807, which ordered the confiscation of all English or English colonial merchandise found in the German Hanse towns. By a second Order in Council, Nov. 11, 1807, all harbors and places in France and her allies in Europe and the colonies, as well as in every country with which England was not at war, but from which the English flag was excluded, were placed under the same restrictions as if strictly blockaded. These orders were followed by reprisals on the French side. By the Milan Decree of Dec. 17, 1807, strengthened by a second, of Jan. 11, 1808, issued from the Tuileries, any vessel, of whatever nation, that had been searched by an English ship, or had submitted to be sent on a voyage to England, or paid any duty to the English government, was to be declared denationalized and treated as English. By the Treaty of Tilsit (1807) Russia consented to close her ports to English commerce, and in order the more effectually to annihilate such commerce, there appeared, Aug. 3, 1810, the tariff of Trianon for colonial goods; this was extended by a decree of September 2; on October 18 followed the decree of Fontainebleau, ordering the burning of all English goods, an order which was to be carried out with more or less modification in all countries connected with France.

The consequence of the Continental System was undoubtedly the springing up upon the Continent of many branches of manufacture. On the other hand, the price of foreign goods rose to an extraordinary height, the daily comfort of the middle classes was seriously affected, and the American carrying trade, then very prosperous, was practically ruined. On the whole, the Continental System, both politically and economically, was a mistake. Russia abandoned it in 1810, and with the breaking up of Napoleon's power the system collapsed entirely. On the English side the enforcement of the Orders in Council gave offense to the United States and was one of the principal causes of the War of 1812. Consult: Mahan, *The Influence of Sea Power upon the French Revolution and Empire* (Boston, 1894); Thiers, *Histoire du consulat et de l'empire* (Paris, 1845-62); Cime, *Etude sur les tarifs de douane et les traités de commerce* (Paris, 1875); Henry Adams, *History of the United States* (New York, 1889-91). See NEUTRALS; NAPOLEON I.

CONTIN'GENT (from Lat. *contingere*, to touch). A quota of troops, furnished to the common army by another branch of the service or by different coöperating nations or armies. It was the naval contingent that saved the day in the defense of Ladysmith against the Boers in 1899. The various contingents of the international armies formed the common army under the leadership of Count Waldersee, the German commander, in the China campaign of 1900. The troops to be furnished by each of the United States under a call for volunteers by the President is its *quota*.

CONTINGENT REMAINDER. See REMAINDER.

CONTINUANCE. In law, the adjournment

of a cause from day to day or from one term of the court to the next succeeding term. The proceedings of a case on trial or otherwise before the court are continuous until it is disposed of by judgment decree or other final proceeding. An interruption of the proceeding, whether by the absence of a party, or his failure to proceed, or by the termination of the sitting of the court, naturally results in a discontinuance of the proceeding, with the consequence that it loses its place on the calendar and must be begun over again at a future term or sitting of the court. To obviate this result, the court may make an order continuing the case from day to day or from time to time until disposed of. Continuances are granted as a matter of course when necessitated by the adjournment of the court in which the case is pending and, on the request of either party to the suit, for good cause, as for the illness of a party or his counsel or the illness or disappearance of a material witness, and the like. In this class of cases, however, the application is addressed to the discretion of the court which may grant or withhold the continuance prayed for. See ADJOURNMENT; and consult Blackstone, *Commentaries on the Laws of England*, and the authorities cited under PROCEDURE, LEGAL.

CONTINUED FRACTION. See FRACTION. **CONTINUITY** (Lat. *continuas*, from *continuus*, uninterrupted, from *continere*, to hold together, from *com*-, together + *tenerere*, to hold). In geometry, a vital principle which asserts that if from the nature of a particular problem we would expect a certain number of solutions, then there will be the same number of solutions in every case, although some may be imaginary. For example, a straight line and a circle in the same plane intersect in two points real, coincident, or imaginary. The sum of the angles of a quadrilateral is a perigon, whether the quadrilateral is convex, cross, or concave. In this case, however, angles which have decreased and have passed through zero must be regarded as negative. By the principle of continuity theorems concerning real points or lines may be extended to imaginary points or lines. This change can take place only when some element of the figure passes through either a zero value or an infinite value; e.g., rotate an asymptote of the hyperbola about the origin; before rotation it cuts the curve in two infinite points; after rotation it cuts it in two real points or two imaginary points. In case of the real points, rotate it still further and these pass to infinity, and imaginary points occur. Many propositions of elementary geometry may be inferred from this principle. It was first stated by Kepler, emphasized by Boscovich, and put into acceptable form by Poncelet in his *Traité des propriétés projectives des figures* (2d ed., Paris, 1865-66).

More generally, continuity is a philosophical concept exemplified in space and time. It has been defined as a series of adjacent parts with common limits; as infinite divisibility, i.e., that, however small the segment between the two points, a further division is possible; but in modern analysis continuity is the essential property of a continuum. By a continuum is understood a system or manifoldness of parts possessed in varying degree of a property *A*, such that between any two parts distant a finite length from each other an infinite number of other parts may be interpolated, of which those

that are immediately adjacent exhibit only indefinitely small differences with respect to the property *A*. This is expressed by Cantor as a *perfekt zusammenhängende Menge*, a perfect concatenation of points; e.g., all numbers rational and irrational in any interval form a continuum. A concatenation not perfect is called a semicontinuum, e.g., the rational or the irrational numbers in any interval. A straight line is said to possess continuity.

By the continuity of the roots of an equation is meant that, as a result of certain variations of the function, different pairs of roots may during the process become equal or imaginary, the total number always continuing the same—an example given by Leibnitz. By the continuity of a function of x is meant the fact that indefinitely small and continuous changes in the value of x between certain limits produce indefinitely small and continuous changes in the function. Consult: Jordan, *Cours d'analyse* (Paris, 1893); Poncelet, *Traité des propriétés projectives des figures* (ib., 1805-66); *Encyclopädie der mathematischen Wissenschaften*, vol. i (Leipzig, 1901); Cantor, *Mathematische Annalen*, vols. xx and xxi (ib., 1882-83); Mach, in *The Open Court*, vol. xiv (Chicago, 1900).

CONTINUITY, LAW OF. A principle first formulated by Leibnitz (q.v.), which is expressed in the Latin sentence, *Natura non facit saltum* ('Nature does not make sudden leaps'). This is a denial of discreteness, and the assertion that differences of kind are merely differences of degree. The law of continuity may be illustrated in the solar spectrum, which presents us with a series of colors blending into each other in such a way that it is impossible to say where one color ends and another begins. By abstracting from the intervening colors and shades we can represent any detectable differences to ourselves as discrete, but this appearance of discreteness comes from failure to attend to the mediating shades. Generalizing this, we get the law that all gaps between differing kinds are bridged over by intervening kinds, which form a continuum of differing degrees. Darwinism gives a view of evolution that supports the law of continuity in biology. De Vries's doctrine of mutation (q.v.), on the contrary, would deny the validity of the law of continuity in this field. William James (q.v.) has vigorously assailed the universality of the law of continuity, maintaining that experience presents us with discontinuities as well as with continuities, and "that conjunctions and separations are, at all events, coördinate phenomena which, if we take experiences at their face value, must be accounted equally real." James seems to be justified in his contention; the law of continuity is an unwarrantably sweeping generalization. Consult James, *Essays in Radical Empiricism* (1912). See LEIBNITZ.

CONTINUOUS SERVICE. See ENLISTMENT.

CONTIO. See COMMITTUM.

CONTORNATE (It. *contorniato*, from *contorno*, contour, from ML. *contornare*, to turn around, from Lat. *com-*, together + *turnare*, to turn, from *turnus*, Gk. *τόρνος*, *turnos*, lathe). A term applied to a class of antique copper medals, slightly larger than coins, which have a deep line cut round the edge, like a furrow, and are thereby marked by a strongly projecting edge. They show on one side a head, often of an emperor or other ruler, sometimes Homer,

Sallust, Horace, or other authors, and on the other a scene from the circus or amphitheatre or from mythology or, rarely, daily life. No contorniate is known to be certainly earlier than the third century A.D.; most of them are later. Of the many explanations of the use of contorniates none has won general acceptance. Consult Smith, *A Dictionary of Greek and Roman Antiquities* (3d ed., London, 1890).

CONTORTED STRATA. See GEOLOGY.

CONTOURS (Fr., from ML. *contornare*, to go around). In topographical surveying and military sketching, the lines in which horizontal planes, at constant vertical intervals, intersect the surface of the ground. *Contouring* is a method of exhibiting relief of ground by means of lines so drawn on a map as to indicate points of equal elevation. The lines so drawn on a map and the corresponding lines on the ground are called *contours*. The word *contouring* is applied to the field work directed especially to obtaining data for drawing contours. The difference of elevation of points in adjacent contours is called the *contour interval*, and is usually constant for all the contours on the same map. The horizontal distance between contours, measured in a radial direction with reference to the curvature of the contours, is called the *contour distance*. For equal contour intervals the map contours are closer together, as the slope is steeper. It follows that for steep slopes the map contours will approach each other very closely, and for a vertical wall or cliff they will coincide. Contours are designated by their heights above a datum plane. The height is expressed in feet, except when the metric scale is used, when contour intervals are in meters. Facility in reading contoured maps is essential for military officers. It enables them quickly to form a mental picture of the general configuration of the ground over which they are to operate, to know the nature of the slopes to be traversed and the amount of cover available for the concealment of troops. See SURVEYING; ENGINEERING, MILITARY. See article MAP, where contour lines are shown on the topographical map there given.

CONTRABAND OF WAR (It. *contrabbando*, Sp., Portug. *contrabando*, from ML. *contrabannum*, contraband, from *contra*, against + *bannum*, *bannum*, proclamation, from OHG. *ban*, Ger. *Bann*, AS. *bann*, Eng. *ban*). In international law, goods of such character as to be liable to seizure by a belligerent in the course of trade between a neutral and the enemy in time of war. Munitions of war intended for the use of the enemy and chemicals or other raw materials to be converted into instrumentalities of war by the enemy are always deemed contraband. Other things innocent in character are similarly regarded if intended for the use of the armed forces of the enemy, but not if intended for general use or consumption in the country of the enemy. It is obvious that the latter class of cases may often call for delicate discrimination and may lead to sharp differences of opinion between the belligerent intercepting such a cargo and the neutral state whose commerce is thus interfered with. To some extent the matter has been regulated by treaty among the leading powers, but no satisfactory definition for contraband goods has yet been reached. The changes in methods of modern warfare render the list a constantly shifting one. Great Britain has adopted the classification of (a) *goods ab-*

solutely contraband, and (b) *goods occasionally contraband*. In the case of a Swedish ship in the War of 1812 bound for the neutral port of Bilbao with a cargo of grain intended for the use of the British fleet lying there, the cargo was held to be subject to confiscation as contraband. So, in the Crimean War, Great Britain claimed coal destined for a Russian port to be included under the head of *occasional contraband*. France in the War of 1859 refused to treat coal as contraband. The United States at the time of the Civil War adopted the English position, as did Germany in the War of 1870, and Russia in the war with Japan. Such differences threaten to furnish serious controversy in the event of war between any of the great commercial nations. The rules of international law do not prohibit subjects of neutrals from carrying contraband to either belligerent, but they do so at their own risk. So neutral merchants may trade in arms, ammunition, and stores in time of war as in time of peace, but either belligerent may capture such goods as are of direct and immediate use in war, if it can intercept them in their passage to the enemy while not within neutral jurisdiction. While a neutral power is bound to prevent the departure of armed expeditions from its shores and the supplying of munitions of war, etc., to belligerent vessels in its ports, no duty is imposed of restraining contraband trade, though it has no right to interfere in behalf of subjects whose property is seized by one belligerent on the way to another, provided it belongs to the class of forbidden commodities.

Three requisites are necessary to constitute the offense of *carrying contraband*: 1. Sale and transport of contraband goods within a neutral territory is permissible, but they may not be sent across the frontier to a belligerent by land or sea. 2. The goods must be intended eventually for a hostile destination. 3. The offense is completed with the deposit of the contraband cargo at the belligerent destination.

The ship when captured is generally taken to a prize court by the captor, and the penalty of conviction is the confiscation of the contraband goods, unless the owner of the contraband also has ownership in the vessel, in which case the ship, or his share therein, is likewise confiscated, and also any innocent goods of his ownership. False papers or misrepresentation as to destination may lead to the ship's condemnation. The carrying of agents or dispatches of an enemy must be distinguished as more properly unfriendly neutral service than carrying of contraband. The Trent Affair (q.v.), in which a British vessel carried agents of the Confederate government to England, comes under the former description.

The term *contraband of war* was inappropriately though ingeniously applied during the Civil War by Gen. B. F. Butler, while in command at Fort Monroe, to captured slaves, as a ground for retaining them when demanded by their Southern owners. Consult M. Wiegner, *Die Kriegskonterbande* (Berlin, 1904). See NEUTRALITY; BLOCKADE; INTERNATIONAL LAW.

CONTRABASS. See DOUBLE BASS.

CONTRABASS TUBA. See TUBA.

CONTRACT (from Lat. *contrahere*, to draw up, from *com*, together + *trahere*, to draw). In English and American law, an agreement, enforceable at law, between two or more parties to do or not to do a particular thing. The ele-

ments essential to all forms of contracts are: (a) an obligation founded on the promise made by a party to the contract and resulting from his intent to enter into such an obligation; (b) a meeting of the minds of all the parties to the contract as to the terms and conditions of the promise given. Additional elements may be required to give validity to various classes of contracts, as is pointed out below.

Classification.—Contracts are usually classified as: (a) contracts of record; (b) contracts by specialty; and (c) simple contracts.

Contracts of record, so called, are conclusive legal obligations created by the judgment or order of a court of record. Examples of contracts of record are judgments, recognizances, statutes staple, etc. They are not true contracts at all, as they do not contain a promise and are not founded upon the intention of the party bound, but should properly be classified as *quasi contracts*.

Contracts by specialty are contracts depending for their validity upon the formality of their execution. They are required to be in writing and to be perfected by sealing and delivery by the party to be bound thereby. The usual form of specialty contract is a covenant (q.v.). A bond (q.v.), though in strictness not a contract, being an acknowledgment of indebtedness instead of a promise to pay, has always been regarded and classified as a specialty contract. Contracts by specialty require no consideration to give them validity. As in the case of other contracts, courts of equity will not specifically enforce a specialty contract unless it is founded upon a consideration.

At common law the seal required to be placed upon specialty contracts was of great technical importance, but the law in this respect has been greatly modified by modern statutes. In nearly all of the United States a scroll or mark with the pen may be used in place of a seal. In a number of States it is provided by statute that the seal upon a sealed instrument is only presumptive evidence of a consideration; the effect of which probably is to make a consideration necessary to the validity of a sealed instrument, at least where it is intended by the parties that a consideration is to be given. In a few States all distinction between specialty contracts and simple contracts has been abolished by statute. The common-law form of action for enforcing all kinds of specialty contracts, except a bond, was the action of covenant (q.v.). Recovery upon a bond was secured by the common-law action of debt (q.v.). These distinctions are not preserved in modern systems of pleading. The usual period of limitation upon specialty contracts is 20 years.

Simple contracts are contracts which do not depend for their validity upon any particular formality as to execution, but upon the existence of a consideration, which is a detriment, or a surrender of a right, given in exchange for the promise. (See CONSIDERATION.) A simple contract may be in writing or by parole, or may even be implied from the acts and conduct of the parties manifesting their intentions.

As no formality is required in the creation of a simple contract, it always comes into existence as the consequence of an offer and acceptance. The offer must be accepted in accordance with its terms within a reasonable time, or within the time stated in the offer, in order to give rise to a contract. A refusal to accept, or

a counteroffer, puts an end to the first offer, which cannot thereafter be accepted unless renewed. In contracts entered into by letter, in most jurisdictions, the offer is deemed to be accepted upon the posting of the letter of acceptance, but in a few States it is held that there is no acceptance until the letter of acceptance is actually received by the person making the offer. Inasmuch as there must be an agreement in order to create a contract, any mistake as to the terms of the offer or acceptance will prevent a meeting of the minds of the parties and no contract will arise. But a mistake as to some collateral matter will have no effect upon the contract unless induced by fraud, in which case the defrauded party may rescind the contract. Thus, if A offers to sell property to B for \$10,000, and B accepts, understanding the offer to be \$5000, no contract arises; but if B understands the offer made and accepts it because he erroneously believes the property is of much greater value, a contract does arise. Simple contracts are frequently classified as *express* and *implied*. An express contract is one entered into on terms expressed in spoken or written words. An implied contract is one which is inferred from the acts or conduct of the parties. The latter should not be confounded with the so-called contracts implied in law, as, e.g., the obligation to repay money paid by mistake, which are not true contracts, because not based upon intention. They are properly classified as *quasi contracts* (q.v.). Express contracts may be by parole or in writing, the only difference in legal effect being in the method of proof. A few simple contracts are required, however, by the Statute of Frauds (q.v.) to be executed in writing. Simple contracts are further classified as *unilateral* and *bilateral*. A unilateral contract is one in which only one party to the contract makes a promise in exchange for the other party's giving something or doing some act. A bilateral contract is one in which each of the two parties gives his promise in exchange for the promise of the other, the promise of each being a consideration for the promise of the other.

Contracts are also said to be *executory* or *executed*. An executory contract is one which has not been fully performed. As the performance of a contract terminates its existence as a legal obligation, it will be observed that the expression "executed contract" is a contradiction in terms. A present sale of personal property is sometimes said to be an executed contract, but the expression is improper, as the sale may be effected by a mere meeting of the minds without any promise, and hence without contract. See SALES.

As a contract proper is always an expression of the will or intent of the party to be bound, a promise made by a person mentally incapable of a free act of will or consent, or by a person under a legal disability to bind himself by contract, is unenforceable. Thus, the contract of a lunatic or idiot, or of a person so under the influence of a narcotic or of intoxicating liquor as not to be capable of a free exercise of will, or (at the common law) by a married woman, is wholly void. The disability of the married woman in this respect has, however, been generally removed by statute. The contract of an infant, i.e., a person under the age of 21 years, is, on the contrary, not void, but may be disaffirmed by him when he attains full age.

Performance.—In the case of all true contracts, whether by specialty or simple contracts, the obligations of a party to perform may not arise until the happening of a condition, or the performance of his promise by the other party, as expressly or impliedly provided in the contract by its terms. If there be no such provision in the contract, by certain settled rules of construction (known as the law of conditions implied in law), the performance of one party may be deemed a condition precedent to the performance of the other, or the performance of each of the parties may be a concurrent condition to the performance by the other; i.e., each party must tender his performance before he can recover damages for the breach of contract by the other. In general, impossibility of performance is no defense to an action brought to recover damages for breach of contract. If, however, the contract contemplates the continued existence of the parties or the subject matter of the contract, the death of a party or failure of subject matter is a defense. Thus, in contracts for personal service, death of the employer or employee terminates the contract, and a contract for the use of a particular building or other property is terminated by the destruction of the property.

Suits upon Contracts.—Owing to the rule of pleading in actions upon contract at common law, the plaintiff must show that he has given consideration for the defendant's promise. A third person for whose benefit the contract was made, but who was not a party to it, could not sue upon it. This is still the rule in most jurisdictions, although not in all; and in a few, notably New York, in the single case when A gives money or property to B upon his agreement to pay money to C, C may sue upon the contract upon the theory that a debt has been created in his favor. Equity exercises jurisdiction to compel specific performance of a contract when legal damages would be inadequate. It also exercises its powers to rescind or reform written contracts affected with fraud or mistake. Fraud is also a defense to law to an action founded on contract, it having been early adopted by the courts of law, although it is a defense equitable in character. Contracts which contravene rules of public policy or statutory enactment are illegal and void. See ILLEGALITY.

Contracts in the Civil Law.—In the Roman law contract (*contractus*) signified an agreement which created an actionable obligation. The original roots of contractual obligations were apparently pledge and vow. In the first case, the debtor gave the creditor a pledge, which the creditor held until the debtor had fulfilled his promise. If a debtor had nothing else to pledge, he pledged his own person in the form of a sale. This transaction the Romans called *nexum*. It created something analogous to a judgment debt; and as the debtor was in default, the creditor levied on his body (*manus iniectio*). By the time of Gaius this contract had become antiquated. A vow to the gods to do something for, or pay something to, the third person enabled the priest to intervene and insist upon performance—from this root sprang the sacral contract of the priestly law, the *sponsio*, and out of the *sponsio* grew the sacral contract of *stipulatio*.

At the time of Gaius (early Empire) five classes of contracts were recognized: (a) The

verbal contract, stipulatio, which was actionable because a certain form of words (question and answer) had been observed. It was usual to draw up a written statement (*cautio*) reciting the terms of the agreement, but the validity of the contract rested on the exchange of the spoken words. (b) The *literal contract* (from *literæ*, 'writing'). This was actionable because a formal entry had been made in the creditor's ledger (*expensilatio*). In the case of the verbal and the literal contract it was neither the agreement alone nor the form alone which created the obligation, but the two together. (c) The *real contract*. This was actionable because something (*res*) had passed from the creditor to the debtor, and the return of the thing or an equivalent had been promised. To this class belonged the bailments known as *mutuum, commodatum, depositum, pignus*. Besides these there were many other real contracts without special names. Ultimately it was recognized that any agreement for reciprocal performances would become a binding contract as soon as one party had performed. (d) The *consensual contract*. This was actionable by virtue of the agreement (*consensus*) between the parties, although no form had been observed and nothing had passed. There were only four contracts of this class: *emptio venditio*, sale; *locatio conductio*, hiring; *societas*, partnership; and *mandatum*, commission of agency.

Agreements that fell within none of these four classes were simple pacts (*pacta*), not contracts, and were not actionable. Such pacts might, however, be available for defense, e.g., when a creditor had given his debtor an informal release or an extension of time, and pacts made immediately after the conclusion of a contract (*pacta adiecta*) were treated as part of the contract.

In order that a contract should be valid it was necessary that the parties should be of such age as to be capable of binding themselves and of sound mind, and that the object to be attained should be neither impossible, illegal, nor immoral. Mistake (*error*) was regularly fatal to the validity of a contract, provided the mistake was excusable and essential. A mistaken reason or motive for contracting was not regarded as essential. Where, however, the mistake was caused or utilized by the other party, these limitations disappeared, and the contracts were voidable for fraud (*dolus*). Duress (*metus*) also made a contract invalid.

In modern European codes all agreements except those looking to impossible or immoral ends are valid and actionable, unless a special form is required by law and the required form has not been observed. It is therefore maintained by many writers that the Roman category of real contracts has disappeared, and that there are now but two classes, the formal and the consensual.

Bibliography. For special branches, consult **REAL PROPERTY; SALE; MORTGAGE; ETC.** Also consult: Parsons, *Law of Contracts* (9th ed., Boston, 1904); Anson, *Principles of the Law of Contract* (7th ed., Oxford, 1893; 2d Amer. ed., Chicago, 1887); Chitty, *Treatise on the Law of Contracts* (14th ed., London, 1904); Addison, *Treatise on the Law of Contracts* (10th ed., ib., 1902); Marrison, *Elements of Contracts* (2d ed., Boston, 1901); Hollingsworth, *The Law of Contracts* (1896); Page, *Law of Contracts* (Cincinnati, 1905); and the authorities referred

to under such special titles as **NEGOTIABLE INSTRUMENTS; SALE; ETC.**

CONTRACT, SOCIAL. See **SOCIAL CONTRACT.**
CONTRACTION (Lat. *contractio*, from *contrahere*, to draw up). The wish or necessity for economizing labor and parchment led the scribes of the Middle Ages to use a great many abbreviations or contractions in their manuscripts. These contractions were transplanted into the first printed books; and more recently they have been reproduced in many works, where it was thought desirable that the modern print should represent as nearly as possible all the peculiarities of the ancient manuscript. A knowledge of contraction, therefore, is indispensable, not only to readers of old writings, but to readers of the printed books of the fifteenth, the sixteenth, and the earlier part of the seventeenth centuries, and to all who desire to avail themselves of the vast stores of historical and archaeological materials accumulated in the rolls and records published by the governments of Great Britain, France, and other countries. See **PALEOGRAPHY**.

Contraction may be divided into six classes: (1) contraction, properly so called; (2) contraction by elision or suspension; (3) contraction by writing a smaller letter above the word contracted; (4) contraction by running two or more letters into one character; (5) contraction by symbols representing syllables or words; (6) contraction by initial letters.

CONTRACT LABOR LAW, or ALIEN LABOR LAW. The provisions of the statutes of the United States relative to immigration prohibiting the bringing into the country of aliens who are under contract to perform labor or service of any kind in the United States. The first provisions of this character were enacted in 1885. These were general in terms and were interpreted by the courts to have reference only to persons imported under a contract to perform unskilled manual labor. As this interpretation was unsatisfactory to the labor organizations at whose instance the law was passed, it was amended by a subsequent Act of Congress (Act of March 3, 1903, chap. 1012) so as to cover "labor or service of any kind, skilled or unskilled." See **IMMIGRATION**.

CONTRACT SURGEON and ACTING DENTAL SURGEON. In the United States army, a civilian physician or dentist employed under contract with the surgeon-general of the army. Civilian physicians and dentists may be employed as contract surgeons and acting dental surgeons under contracts entered into by, or with the authority of, the surgeon-general of the army. They are entitled to the transportation and fuel allowances of first lieutenants, and when on duty at a post or station where there are quarters belonging to the United States, they receive the quarters in kind allowed by regulations to a first lieutenant; they are not entitled to commutation of quarters nor to the 10 per centum increase of pay when serving beyond the territorial limits of the United States. They are entitled to the same official obedience from enlisted men as commissioned officers, and may be detailed on councils of administration and boards of survey, act as post treasurer, etc., and witness payments to enlisted men under the provisions of paragraphs 1315 to 1337 of the *Regulations*, but may not be detailed for duty on courts-martial. Generally expressed, the contract surgeon's eligibility

for duty is the same as that of a first lieutenant of the Medical Corps, except in so far as it is limited by the fact that he is not a commissioned officer. Candidates for appointment as acting dental surgeons must be not less than 21, nor more than 27 years of age, and must be graduates of standard medical or dental colleges, trained in the several branches of dentistry, of good moral character, and, prior to appointment, will be required to pass a satisfactory professional examination before a board of dental surgeons, convened for that purpose. Contracts with acting dental surgeons are made for three years, but may be annulled, for cause, at any time. They are attached to the medical department, and are assigned to duty in accordance with the recommendations of the surgeon-general of the army, or the chief surgeon of a military department. An acting dental surgeon is allowed, as an assistant, one enlisted man from the hospital corps, and must operate upon those entitled thereto only.

The United States is the only country in the world employing army dental surgeons. Consult *United States Army Regulations* (1913). See SURGEON, MILITARY.

CONTRAFAGOTTO (It., counterbassoon). The name in orchestral scores for the double bassoon. See **BASSOON**.

CONTRALTO. See **ALTO**.

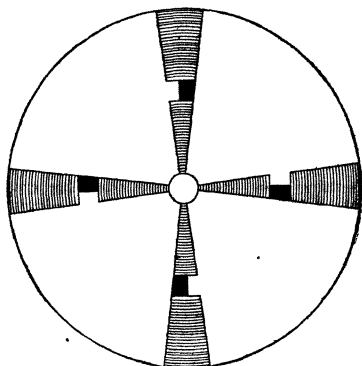
CONTRARY MOTION. See **MOTION**, in Music.

CONTRAST (Fr. *contraste*, from ML. *contrastare*, to withstand, from Lat. *contra*, against + *stare*, to stand). The enhancement of the difference between objects or attributes of objects which results from their juxtaposition or immediate comparison. Contrast has been employed, very loosely, as a principle of explanation in psychology; and we cannot even now say that the whole field of "contrast phenomena" has been adequately explored. It is, clearly, no explanation of a given fact to refer it to a general law of contrast, any more than it is an explanation of a mental connection to refer it to the "association of ideas." We must know, in each particular case, the conditions under which the fact is determined and the connection takes shape.

1. One chapter of the psychophysics of contrast may, however, be considered closed. This is the chapter that deals with the contrast of light and colors. If we lay two black strips upon a gray ground and then push a white cardboard under one of them so that the white projects on either side, we see at once that the black on white is blacker than the (same) black on gray. If we lay a gray disk upon a red ground of the same brightness and stand so far away that the contour of the disk is eliminated, we see a bluish green in place of the gray disk; and the color is most intensive along the line of junction of disk and ground. These experiments may be varied in many ways.

The principal laws of contrast, as determined by such experiments, are five in number: (a) Contrast always takes the direction of greatest opposition. A white induces a black, a color its complementary color. (See **VISUAL SENSATION**.) (b) The more saturated the color (the redder the red, the purer the white), the greater is the contrast effect. (c) The contrast effect is greatest along the line of junction of the contrasting surfaces (marginal contrast). (d) The more nearly alike two colors are in bright-

ness (both light or both dark), the better will be the contrast effect. And (e) the more nearly homogeneous the contrasting surfaces (the less distinction there is at the line of junction), the



Disks for mounting upon the color mixer, to show light and color contrast. The black portions of the disks are black, the white portions white, and the shaded portions of some color. From Helmholtz, *Physiol. Optik* (1896).

better will be the contrast effect. Helmholtz sought to explain these facts, in purely psychological terms, as deceptions of judgment; we see aright, but estimate wrongly; and Wundt accepts the explanation for certain of the phenomena. The psychological theory, however, breaks down when one attempts to carry it out in detail. There can be no doubt whatsoever that, as Hering maintains, contrast of light and color is a matter of direct physiological conditioning, the result of the interaction of excitations within the visual organ, a symptom or expression of the functional unity of the retina.

2. Whether contrast occurs in the perceptual sphere, whether, e.g., "great" and "small" contrast as do blue and yellow, is a much-disputed question. There are certain optical illusions (see **ILLUSION**) which seem to be most easily "explained" by reference to a law of space contrast. In its most direct form the theory of spatial contrast affirms that "the space sensation of a stimulated retinal point is a function primarily of the position of the point stimulated, but also of the space sensations of the neighboring retinal elements" (Loeb); the formula that holds of sensation is thus applied, without modification, to the sphere of visual space perception. It has been said, again, that lines of different direction exercise "contrastive" influences upon the movements of regard, i.e., upon the movements made by the eyes as we attentively follow the course of the lines. (Heymans.) And, lastly, it has been asserted that figures of the same size, surrounded by like figures of another size, look larger "by contrast" if the surrounding figures are smaller, and smaller if these are larger. (Wundt.) Most of these illusions can, however, be otherwise explained; and, despite the array of authorities, the fact seems to be that a given perception is never really changed by contrast with other perceptions. "Perceptual contrast" consists rather in a feeling. When we see a middle-sized man by the side of a dwarf, we are surprised at his height; when we see him by the side of a

giant, we are disappointed in his height. Our perception of the man's height is not affected by the neighborhood of smaller and larger men; the contrast that we "feel" is felt, literally, as surprise or disappointment.

3. Many psychologists, again, assume the existence of an affective contrast (see AFFECTION); a particular pleasure appears more pleasant if it follows a preceding unpleasantness, and conversely. (Fechner, Höffding, Lehmann.) The affective value of a stimulus, however, is not constant, as is its sensation value, but varies with the present state of the organism and the corresponding disposition of consciousness. The "particular" pleasure, then, is not a determinate amount of pleasantness, that may "seem" to be greater or less according to its affective setting. The pleasure actually aroused may differ within wide limits, while the stimulus remains the same. Moreover, where there is affection, there is also sensation; where there is affective contrast there must also be a "perceptual contrast," in the sense just defined of the conditions of the arousal of a contrast feeling. It is, then, perhaps safer to give up the idea of an "affective contrast" altogether.

4. Lastly, we must note that, in certain psychological systems (Wundt, Höffding), the law of contrast figures as a general law of the mental life. Wundt, e.g., speaks of the "law of psychical contrasts" as one of the three psychological laws of relation; all "volitional processes . . . are arranged in groups made up of opposite qualities; . . . these opposites obey in their succession the general law of intensification through contrast. . . . The law is secondarily applied to ideas and their elements." The rejection of this law does not necessarily carry with it the rejection of spatial and affective contrast, though its acceptance would naturally incline us to accept the alleged illustrations of its working.

Consult: Fechner, *Vorschule der Aesthetik* (Leipzig, 1876); Lehmann, *Hauptgesetze des menschlichen Gefühlslebens* (ib., 1892); Wundt, *Outlines of Psychology* (ib., 1902); Höffding, *Outlines of Psychology* (London, 1891); Titchener, *Experimental Psychology* (New York, 1901); Wirth, in *Zeitschrift für Psychologie*, vol. xviii (Leipzig, 1898).

CONTRAT SOCIAL, kôn'trà' sô'sé'ál'. See ROUSSEAU, JEAN JACQUES.

CONTRAYERVA (Sp. *contrayerba*, antidote, from *contra*, against + *yerba*, Lat. *herba*, Eng. *herb*). A medicine once in much repute against low fevers and as a mild stimulant and diaphoretic, but not used in the United States. It consists of the rootstocks (rhizomes) of different species of *Dorstenia*, tropical American plants of the natural order Moraceæ. The genus is remarkable for the plane receptacle in which the numerous small flowers are fixed—the male flowers in superficial depressions, the female flowers in deep sockets. The flowers have neither calyx nor corolla. The fruit consists of achenia, imbedded in the fleshy receptacle from which they are projected by elastic force when ripe. *Dorstenia contrayerva* is a perennial plant with palmate leaves and somewhat quadrangular receptacles. Its rootstock is knotty, one to two inches long, about one-half inch thick, reddish brown, pale within, sending out on all sides many slender fibres (roots), which are generally loaded with small brown knots. It has a peculiar aromatic smell and a somewhat astringent,

warm, bitter taste. It keeps badly. It contains so much mucilage that a decoction of it will not pass through a filter. *Dorstenia brasiliensis*, a stemless species, with oblong, heart-shaped leaves, and a circular receptacle, a native of the West Indies and Brazil, possesses similar properties, but is said to be more energetic. Other species have been represented as efficacious against serpent bites; hence the name "contrayerva," a counterpoison.

CONTRERAS, kôn-trá'rág. A village about 12 miles southwest of the city of Mexico, the scene, Aug. 19 and 20, 1847, during the Mexican War, of an important battle between a Mexican force of 7000 under General Valencia, supported by another of 12,000 under General Santa Anna, and a United States force of 4500 under General Scott. The Mexicans occupied a strong position on high ground and fought for a time with great gallantry, but, being attacked both in front and rear at daylight on the 20th, finally gave way and fled in confusion, after having lost in killed and captured over 1500. The American loss in killed and wounded was reported by General Scott at 60. Consult Wilcox, *History of the Mexican War* (Washington, 1892), and *Autobiography of Lieutenant General Scott* (New York, 1864).

CONTRERAS, HERNANDO DE (c.1520-50). A Spanish adventurer, a son of Rodrigo de Contreras, Governor of Nicaragua. After the confiscation of his father's property he plotted revenge by organizing, in company with his brother Pedro, an expedition against Peru, which he determined to seize as his inheritance, tracing his claim somewhat remotely to certain rights of his grandfather, Pedrarias, the former Governor of Nicaragua. After murdering the Bishop of Nicaragua, they captured Panama, April 20, 1550, and took a large part of the treasure left there by the licentiate La Gasca. While Hernando was pursuing La Gasca, who was already on his way from Peru to Spain, the citizens of Panama retook the city and pursued the brothers. Hernando was shortly afterward drowned (May, 1550) while endeavoring to make his escape, and Pedro fled into the interior of the country, where every trace of him was lost.

CONTRERAS, JUAN SENEN DE (1760-1826). A Spanish soldier. He was born in Madrid, studied military matters, under commission from Charles III, in England and various continental countries, and took part, in 1788, in the campaign of Austria against the Turks. In the War of Independence he greatly distinguished himself, in particular at Talavera and at the defense of Tarragona, where he was captured by the French. He was imprisoned in the castle of Bouillon, but escaped thence in 1812 and made his way to London, whence he returned to Spain in 1814. He wrote an account of the siege of Tarragona which appeared in Paris in 1825 as volume iii of the *Mémoires relatifs aux révolutions de France et d'Espagne*.

CONTRIBUTION (Lat. *contributio*, from *contribuere*, to contribute, from *com-*, together + *tribuere*, to grant, from *tribus*, tribe; probably connected with *trabs*, beam, Umb. *trepu*, Welsh *tref*, village, Goth. *þaupr*, AS. *þorp*, OHG. *dorf*, Ger. *Dorf*, village). In the law of war, a levy of money or supplies imposed by an invader upon the citizens of an enemy's territory. The term *requisition* is usually applied to a levy of supplies, which may consist of food,

forage, clothing, or means of transport. Contributions are an outgrowth of the conditions of pillage and devastation which formerly marked the course of an invader. Private property in land was of course exempt from seizure owing to its immovability; but personal property, being of a portable character, was appropriated for the purpose of maintaining and strengthening the invading force. This practice reached its height during the seventeenth century, when armies of adventurers swept over Europe, depending upon the country for support. Gradually, with the growth of more humane feelings and for the more practical reason of increased efficiency and discipline in armies, the practice hardened into the usage of permitting inhabitants of invaded territories to purchase immunity from plunder by payment of a money indemnity.

A contribution is of the nature of an extraordinary tax (regular taxes being appropriated as public property by the enemy), and though it is levied primarily by the invader, it may be administered by local representative authorities, and its incidence thus regulated. Modern usage has approved the giving of receipts or *bons de réquisition* for the sums or quantities taken, to guard against burdensome demands by later bodies of invaders; also to furnish a basis for recovery from the domestic government in the event of national division of the loss. Yet the state is not generally held liable for losses entailed by contribution; but these losses are considered to have been beyond the state's control, except when a certain territory has been given over to an enemy to protect the rest of the country. In that case justice demands a different rule. Effort has been made by international convention to modify the usage of exacting contribution, and modern warfare has relaxed its severities, though during the Franco-Prussian War it was rigorously enforced by Prussia. The Allies made no levies in the Crimea, nor did the United States in Mexico in 1847. The British also generally purchased supplies from the Boers. In each of these cases, however, this conduct appears to have been dictated by motives of momentary policy. Contribution should be distinguished from tribute, which is usually a condition of peace exacted by treaty. Consult the authorities referred to under WAR. See TAX; TRIBUTE, CONQUEST.

In municipal or private law contribution denotes the right of one person to exact from another his proportionate share of a common loss; as where one of two sureties on an obligation discharges the whole obligation, he is entitled to call upon his cosurety to contribute his share of the amount so paid. The term is sometimes employed of the right of a surety to recover from the principal debtor the amount paid by the surety in discharge of the latter's liability, but this is more properly termed "indemnity" or "exoneration" (qq.v.). In exceptional cases, also, a tenant in common or joint tenant of real estate might at common law be compelled to contribute to the cost of necessary repairs. (See PRINCIPAL AND SURETY; COMMON, TENANCY IN.) In maritime law, also, the principle of contribution is applied in cases where, in order to save a ship or cargo, a part of the goods are cast overboard. In such case the loss is equitably distributed so as to fall on the entire ship and cargo. See MARITIME LAW.

CONTRIBUTORY NEGLIGENCE. See NEGLIGENCE.

CONTRITION (Lat. *contritio*, grief, from *conterere*, to bruise, from *com-*, together + *terere*, to rub). Sorrow for sin. As a term of Roman Catholic theology, it signifies "a sorrow of mind and a detestation for sin committed, with a firm purpose of not sinning in the future." A smaller degree of sorrow, arising from "the consideration of the turpitude of sin or from the fear of hell and of punishment," is called "attrition."

CONTROLLEER (variant of *comptroller*, q.v. for etymology). On shipboard, a contrivance for holding the anchor chain and keeping it from running out while getting up anchor or mooring. It is made in two parts, one of which slides vertically. When this part is up, the chain slips freely over the jaws of the controller; when the movable part is lowered, the chain drops in a slot, where it is caught and held. For further security the controller usually has an arch-shaped iron strap above it; this keeps the chain in place and has sockets for a heavy bar which holds the chain down against the jaws.

CONTUCCI, ANDREA. See SANSOVINO.

CONTUSION. See BRUISE.

CONULARIA (Neo-Lat. nom. pl., from Lat. *conus*, cone). A genus of fossil Pteropoda of curious form found abundantly in some Paleozoic rocks and rarely in Permian and Triassic beds. The shell, when perfectly preserved, has the form of an elongated quadrangular pyramid of which the sides are flattened and the edges sharp. In size they vary from half an inch to 10 inches in length. The surface is ornamented by numerous transverse ridges, and the interior is divided by septa in the apical portion. The aperture is closed by four incurved lobes, which are extensions of the sides of the pyramid. Certain forms in the Utica slate of New York State, originally described as algae, have been shown to be sessile *Conularia*, in which the young remain attached to the parent shell to form a colony with the appearance of a branching seaweed. Consult: Hall, "Geological Survey of New York," in *Paleontology*, vol. v, part ii (Albany, 1879); Ruedemann, "Notes on the Discovery of a Sessile *Conularia*," in *American Geologist*, vol. xvii (Minneapolis, 1896); Slater, "A Monograph of the British *Conulariæ*," in *The Palaeontographical Society*, vol. for 1907 (London, 1907). See also PTEROPODA.

CONUNDRUM (probably a pseudo-Latin word; hardly from Lat. *conandum*, thing to be attempted, from *conari*, to attempt). A pun in the interrogative form, a kind of riddle (q.v.) involving the discovery of some odd or absurd resemblance between things utterly dissimilar, or of some odd difference between similar things. The conundrum is usually put in the form of a question, the answer to which either is or involves a pun. A good example is the following: Q. When is it easiest to read? A. In the autumn, when Nature turns the leaves. Save in folklore and savage life, the conundrum has almost entirely supplanted the riddle.

CONVALLARIA. See LILY OF THE VALLEY.

CONVECTION OF HEAT, CONVECTION CURRENTS. See HEAT, *Expansion*.

CONVENT. See MONASTERY.

CONVENTICLE (Lat. *conventiculum*, dim. of *convetus*, assembly, from *convenire*, to assemble, from *com-*, together + *venire*, to come). 1. The private religious meetings in the early Church. 2. Later a cabal among the monks of

a monastery formed to secure the election of a favorite as abbot; the word consequently fell into disrepute. 3. It was given as an appellation of reproach to the assemblies of Wiclif's followers and was afterward applied (4) to the meetings of English and Scottish Nonconformists. In this connection the legal term developed. The Conventicle Act of 1664 made all assemblies for religious purposes, other than those of the Church of England, illegal, permitted houses to be searched for suspected conventicles, and imposed the penalty of transportation for repeated offenses.

CONVENTION (Fr., from Lat. *conventio*, a coming together, a meeting, from *convenire*, to meet, from *com-*, together + *venire*, to come). In the civil law, a contract, pact, or treaty. Hence, in more general usage, a rule of conduct depending upon agreement, express or implied, rather than on any positive rule of law. Thus, we speak of the *conventions* of a constitution, meaning those parts of it which are the result of custom and of general agreement, as distinguished from the *law* of the constitution, which is embodied in statutes or in judicial decisions. The term is also employed in a technical sense, in the language of diplomacy, and in military affairs, with the signification of treaty or agreement respecting the conduct of military operations or the relations of the contracting parties to one another.

In the political sense, the term "convention" signifies an extraordinary assemblage of delegates, representing the people of a state or the members of a political party, for other purposes than the regular functions of government. Thus, a regular legislative body is not a convention, though the term is sometimes applied to the joint meetings of the two houses of a State Legislature when convened for the formal election of a United States Senator. The two houses of Parliament constitute a convention, whether acting jointly or severally, if assembled, without authority of law. This was the character of the two "convention Parliaments," as they were called, which met in 1660 to restore Charles II to the throne, and in 1689 to alter the succession from the house of Stuart to William and Mary. In both of these cases the illegal and revolutionary acts performed were afterward validated and confirmed by regular acts of Parliament. Of a similar character was the convention by which the first French Republic was declared in 1792, and under which the Revolution was carried on till the establishment of the Directory in 1795.

Constitutional Conventions. The fact that conventions may be made up of delegates representing the whole body of the people of a state, and chosen specifically to represent the popular will in a particular matter, has made them a favorite instrument for framing a new scheme of government or for amending an old one. The convention is thus a more immediate representative of the people, with a higher and more imperative mandate than the legislature. There has been only one national constitutional convention in the United States—that which framed the Constitution; but the high character of this assemblage, the patriotic spirit and wisdom which animated it, and the astonishing success which has attended its labors, have made it the immortal type of such gatherings. In the United States its members are revered as the "Fathers of the Constitution."

This convention met, pursuant to the call of the Congress, in Philadelphia, on the 14th of May, 1787, to frame measures for the preservation of the union of the States and the establishment of a stable and efficient government; and, under the presidency of George Washington, it completed its labors on the 17th of September. It included most of the men of authority and influence in the country, among them such well-known figures as Alexander Hamilton, Benjamin Franklin, James Madison, Roger Sherman, Robert Morris, Elbridge Gerry, and Rufus King, and all but one (Rhode Island) of the original 13 States were represented in its deliberations and in the final vote by which the Constitution was adopted. The Constitution (Art. V) provides for its own amendment by the process of a convention called upon the demand of two-thirds of the States; but the greater ease and simplicity of the alternative method, of proposing amendments to the several States by a two-thirds vote of the two houses of Congress, has caused the latter method to be preferred. See CONSTITUTION OF THE UNITED STATES.

In the States composing the American Union, however, the convention method of amending their constitutions has usually been followed. The ordinary procedure is for the Legislature to call a convention to be chosen by vote of the electors, and providing for the submission of the results of its work to the Legislature, and then to the people for ratification. In many cases the proposed amendments are submitted directly to the people, without previous reference to the Legislature, and in at least one recent case (Mississippi, 1890) an amended constitution was promulgated and put into effect by the constitutional convention which framed it, without ratification by the people or the Legislature. Doubtless such amendment, by convention only, is valid, if the powers of that body are not limited by the statute calling it into existence. But where the Legislature, in calling a convention, prescribes for the submission of its conclusions to the Legislature or the people, or both, for ratification, the amendments do not acquire the force of law until such ratification has been had. See *Jameison, Treatise on Constitutional Conventions* (4th ed., Boston, 1887).

Political Convention. A gathering of delegates representing a political party for the purpose of placing in nomination the candidate of that party for an elective office. The method of holding elections is carefully regulated by statute in all communities in which public offices are filled by popular vote, but the method of nominating candidates for such offices is usually left to the initiative of the voter. Under the party system which prevails in most popular governments, the process by which candidates are selected and placed in nomination is usually supervised by the party organizations seeking to control the election. In Great Britain candidates for Parliament are named by committees composed of party leaders, and in the early history of the United States the necessary leadership was supplied by party committees in Congress. Nominations for the presidency were made in this way until 1824. At the present time, however, nearly all nominations for elective offices in the United States, whether great or small, are made by the primary and convention systems. The primary is

the meeting of the electors themselves, at which delegates to the nominating conventions are chosen. In some instances, however, the system is more complicated, the voters at the primaries choosing delegates to local conventions, and these, in their turn, electing delegates to represent the party in State or national conventions. The enormous extension of this system is doubtless due to the ease and completeness with which it lends itself to partisan control of elections, and thus of the machinery of government. It has doubtless done much to build up the system of party domination and the power of the great party leaders. The party organization, controlling the primaries, makes up a convention of its partisans and dependents, and thus dictates the nominations for office, leaving to the voter no choice but that of supporting or rejecting the candidate of his party. Then, when the party organization of city, county, or State, through a refinement of these methods, becomes wholly subservient to one man, we have the "boss" system which exists and flourishes to a large extent in the United States. The party convention, as the chief instrumentality of boss rule, has excited so much resentment in recent years that its existence is seriously threatened. In some of the States attempts have been made to render the primaries and conventions more truly representative of the body of the voters by statutory regulation of the nominating machinery, and in others a system of "direct nomination" of candidates for public office by primaries held for this purpose or by direct ballot has been instituted. This movement is gaining ground rapidly and bids fair to destroy the convention system altogether or to leave it only the function of formulating and declaring the principles of the party.

National conventions—for the nomination of candidates for the presidency and vice presidency of the United States—were first held about 70 years ago. The Anti-Masonic party (1828-32) was the first political party to perfect the national-convention system, and that party held the first national convention in the presidential campaign of 1832. Both factions of the Democratic-Republican party had, however, held nominating conventions that were not national nor systematically representative during the campaigns of 1824 and 1828. The collapse of the congressional nominating caucus in the campaign of 1824 hastened the development of the convention system. Political conventions, like most other representative bodies, usually reach their conclusions by a majority vote of the delegates present. The national conventions of the Democratic party, however, are governed by a peculiar rule, requiring a two-thirds vote for a candidate in order to secure the nomination. Another practice, peculiar to the machinery of the Democratic party in nominating its candidates for the presidency and vice presidency, is the "unit rule," as it is called, under which certain State conventions bind the delegates of those States in the national convention of the party to cast the unanimous vote of the delegation according to the wishes of the majority of its members.

Although the principal business of political conventions is the nomination of candidates for office, they have, in the course of American political development, become the councils of the great parties, and in and by them the prin-

ciples of political action are formulated and declared. The "platforms," as they are called, adopted at State and national conventions, constitute the declarations of policy of the parties making them, upon which they seek the verdict of the people at the ensuing election. This declaration of principles has become one of the most important functions of political conventions and often constitutes the principal part of their work. See ELECTION; NOMINATION; POLITICAL PARTY. Consult Bryce, *The American Commonwealth* (ed. 1912).

CONVENTION, NATIONAL (Fr. *convention nationale*). The third assembly of the deputies of the French people chosen after 1789, and the one which assumed the government of France on the overthrow of the throne in 1792. After the Legislative Assembly had decreed the suspension of the King, Aug. 10, 1792, it voted the election of a National Convention, which commenced its sittings on September 21, immediately after the dissolution of the Legislative Assembly. Its first act was to declare the abolition of the kingship and to make France a republic. Upon this followed the trial and condemnation of the King. Through the support of excited mobs, the extreme Jacobin party became predominant in the convention, where, from the elevated seats on which its members sat, it received the name of the Mountain. (See MONTAGNARDS.) The Revolutionary Tribunal and the Committee of Public Safety were created by this party. The Girondists (q.v.), at first a powerful party, were destroyed, many of them perishing by the guillotine; and a new constitution, thoroughly democratic, was adopted Aug. 10, 1793. Its operation, however, was suspended until peace should be restored. Meanwhile the rulers in the convention displayed marvelous energy, almost a million citizens being placed under arms, and immense supplies of military stores being raised by means of continual requisitions. By order of the majority of the convention thousands of its political opponents were thrown into prison, and the number who died by the guillotine increased daily both in Paris and throughout France. In the end the National Convention became subject to the dictatorial power of Robespierre (q.v.) and independent opinion was no longer expressed. The overthrow of Robespierre was followed by a great reaction. The Jacobins were suppressed; and finally the remnant of the convention, after concluding peace with Prussia and Spain, dissolved itself, Oct. 26, 1795, leaving to the nation a new constitution, which placed the government in the hands of the Directory (q.v.). During its long lease of life the National Convention had passed over 8000 decrees and acts and had set into motion forces which profoundly influenced the history of France and of Europe. See FRANCE; DANTON; HÉBERT; MARAT; ROBESPIERRE; ETC.

CONVENTIONAL. In art, a term which indicates that a work has been produced in accordance, not with the absolute principles of beauty in form and color, or with the appearance of natural objects, but with the theories and rules concerning forms and colors which prevail at a given time or in a given country or social class. An artist who adheres too rigidly to such rules is said to be conventional. The term is also used to describe representations of natural objects; as, e.g., leaves which

are not strictly true to nature. Such representations are frequently used for decorative effect, and the objects are said to be conventionalized.

CONVENTION PARLIAMENT. A British term for a Parliament convened without royal authority. The English sovereign has a vested prerogative in the assembling of Parliaments, but when the crown is in abeyance convention Parliaments meet—as before the restoration of Charles II (1660), and when William and Mary were offered the sovereignty after James II had fled the kingdom (1689). The acts of such Parliaments are subsequently ratified by a Parliament summoned in due form.

CONVERGENCE. See SERIES.

CONVERSANO, kōn'vēr-sā'nō. A city in southern Italy, in the Province of Bari, situated on an eminence about 20 miles southeast of the city of that name and 5 miles from the Adriatic coast (Map: Italy, M 7). It is the seat of a bishop, has a beautiful cathedral of the thirteenth century, the nunnery of San Benedetto, and a castle which belonged to the family of Acquaviva. A trade in wine, oil, flax, cotton, and almonds is carried on. It was founded by the Etruscans. Pop. (commune), 1881, 11,890; 1901, 13,685; 1911, 15,112. Consult S. Simone, *Il duomo di Conversano* (Troni, 1896).

CONVERSAZIONE, kōn'vēr-sā'tsē-ō'nā (It., conversation). A gathering for social purposes and conversation, where amateurs and others meet for interchange of ideas on literature, art, or science.

CONVERSE, FLORENCE (1871–). An American author, born in New Orleans. She graduated from Wellesley College in 1893 and was a member of the editorial staff of the *Churchman* from 1900 to 1908, when she joined the staff of the *Atlantic Monthly*. Besides her stories in the magazines, she is author of *Diana Vetricia* (1897); *The Burden of Christopher* (1900); *Long Wall, A Romance* (1903); "Everyman's Library," (1908); *The House of Prayer* (1908); *A Masque of Sibyls* (1910); *The Children of Light* (1912).

CONVERSE, FREDERICK SHEPHERD (1871–). An American composer, born at Newton, Mass. He was educated at Harvard University and at the Royal Academy of Music, Munich. From 1899 to 1901 he was instructor in harmony in the New England Conservatory of Music. At Harvard he was instructor in music in 1901–04 and assistant professor in 1904–07. His compositions include: "Sonata in A"; "Suite for Piano"; "Festival of Pan" (1904); "Night and Day"; "La belle dame sans merci"; "Three Love Songs"; "Two Songs for a Soprano Voice"; "Quartet in A Minor"; "Two Songs for Low Voice"; "Silent Noon"; "Laudate Dominum"; "The Pipe of Desire"; "The Sacrifice"; "Job," an oratorio; and "Ormazd," a symphonic poem.

CONVERSION (Lat. *conversio*, from *convertere*, to turn, from *com-*, together + *vertere*, to turn; connected with OChurch Slav. *vrătiti*, Skt. *vart*, to turn, Goth. *vairpan*, AS. *weorpan*, OHG., Ger. *werden*, to become). In logic, the transposition of subject and predicate in a proposition—e.g., "No S is P" becomes by conversion "No P is S." Conversion is *simple* when no other change is made in the original proposition than the transposition of subject and predicate. It is *limited* or *accidental* (*per accidens*) when the quantity of the proposition is reduced

from universality to particularity—e.g., "All S is P" becomes by limited conversion "Some P is S." Simple conversion here would be unwarranted. Conversion is by *contraposition* when it is preceded by obversion (q.v.). The proposition obtained by conversion is called the converse of the original proposition. See LOGIC.

CONVERSION. At common law, the unauthorized assumption by one not the owner of the dominion of the owner over goods and chattels. The act of conversion may consist either in the destruction of the property, its sale or transfer to a third person, or the use of it as owner. For example, a person converts the horse of another by wrongfully taking it into his possession or detaining it; an auctioneer or agent for B converts the furniture of A by selling it as the property of B, although he may believe that it is B's property; a manufacturer converts A's cotton or wool when he makes it into cloth, even though in good faith he thinks the cotton or wool is his own; a person who wrongfully draws out a gallon of liquor from a cask and fills up the cask with water converts the entire quantity. In each of these cases the converter wrongfully assumes the dominion over the property and exercises it to the exclusion of the owner. The mere loss of property by a carrier, or its deterioration because of careless storage by a warehouseman, is not conversion, as neither carrier nor warehouseman in such case exercises an act of ownership over it.

The common-law action by the owner against the converter was that of *trover*, so called from the French *trouver*, to find, because the declaration contained an averment that the defendant had found the property and had thereafter converted it to his own use. This averment, being in most cases fictitious, is no longer employed, and the action is now spoken of as one of conversion rather than of trover.

The amount of damages recoverable in an action of this kind is generally the value of the plaintiff's interest in the property at the time of the conversion. Where the conversion was willful the owner may usually recover the enhanced value due to the repair or improvement of the property by the converter, and he may in any case, whether the conversion was innocent or willful, usually retake the property in its improved form, in lieu of suing for damages. Whether the defendant has the right to reduce damages by tendering the property to the plaintiff is a question upon which the courts in this country are not agreed. Upon principle it would seem he has no such right. In case the property is still in possession of the converter, the owner has the option of reclaiming or of suing for damages. If he resorts to the latter alternative, obtains judgment, and collects it, the title to the converted property vests in the defendant. But neither in England nor in the United States does title vest in the defendant without the plaintiff's assent, unless the judgment is satisfied. See TORT; TROVER; RECAPTION; DAMAGES, and consult the authorities there referred to.

Conversion of property in equity is quite a different thing from the common-law tort, which we have been considering. In equity, real property is treated as converted into personality, and personal property into realty, where the owner has properly expressed his intention that such an alteration should take place. Land may be converted into the purchase money, in equity, by a contract to sell; it may be converted into per-

sonalty, also, by a devise in a will to sell it and distribute the proceeds. As equitable conversion works a radical change in the legal character and the devolution of property, the intention of the owner to effect such a conversion must be clearly manifested.

The conversion of land into personalty is also brought about in the administration of the estates of bankrupts or of intestates, generally under statutory provisions. The land is sold by trustees or administrators, and the proceeds applied to the payment of debts. Conversion is applied, by some authorities, to the change of partnership debts, with the consent of creditors, into the debts of one partner, or the change of a partner's debts into those of the firm. See *EQUITY*; and consult the authorities there referred to.

CONVERTER. A device used in transforming molten pig iron into steel by the Bessemer process (see *IRON*; *STEEL*). The converter consists of a heavy sheet-iron, pear-shaped vessel, suitably lined with acid or basic refractory material, and having numerous holes in the bottom through which a powerful air blast is driven during the process. From this vessel the resultant molten steel is poured into molds. A similar apparatus is also employed in converting copper matte into crude metal. See *COPPER*.

CON'VEX. See *CONCAVE*.

CONVEY'ANCE (from *convey*, OF. *conveier*, *convoier*, Fr. *convoyer*, from ML. *conviare*, to accompany, from *com*, together + *via*, way; connected with Lith. *veza*, wagon, track, Skt. *vaha*, road, Goth. *wags*, OHG. *wec*, Ger. *weg*, AS. *weg*, Eng. *way*, from Lat. *vehere*, Skt. *vah*, to carry). The technical term for a transfer of real property, the word having in law retained its earlier English meaning of a transfer, or passing, of a thing from one to another. It comprehends all manner of transfers—whether by livery of seisin, judgment of law, or deed—whereby any interest in land is vested in another, but it is strictly applicable only to transfers *inter vivos*, and does not include devises of land by will, or the devolution of an estate upon the heir by descent, or to the husband and wife of their curtesy and dower, or to the state of its right by escheat or forfeiture; neither does it include involuntary transfers of property, as by bankruptcy, the creation of judgment or statutory liens, etc. It is, thus, a term of much narrower signification than *alienation*, and somewhat more restricted than *common assurance*, though it is much wider than the term *grant*, as it includes transfers of interests which do not require, or which cannot be effected by, that process. A lease for years, even though made by parol, is a conveyance, and so is a mortgage, a declaration of trust, a marriage settlement, the creation of a power affecting land, etc. The term is also applied to the transfer of title to a ship, but not to the alienation of other species of personal property. The general substitution of written for parol and ceremonial transfers of land, effected by the Statute of Frauds (29 Car. II, c. 3, 1676), has made the term *conveyance* one of common application to the instrument of transfer as well as to the transaction itself.

The difficult and technical character of the law of real property appears at its worst in the complicated processes which have from time to time been developed for transferring such property. The earlier methods of the common-law

system depended for their efficacy largely on the notoriety of the transaction, the feoffment, or livery of seisin, being a public ceremonial, and the subsequently devised processes of "levying a fine" and "suffering a recovery" being attended with the publicity of judicial proceedings. These "notorious" conveyances, as they were termed, have in modern times given place to more convenient modes of transfer, which are called "secret" conveyances. This salutary change has been brought about by the general substitution of written deeds of transfer, which take effect upon delivery, for the older and more formal methods, and the form and style of these deeds, formerly in the highest degree technical and complicated, have in recent years been greatly simplified by statute. The general prevalence of registry acts and of the practice of recording deeds in the United States does not affect the secret character of the conveyance, as such, this being complete upon the delivery of the deed, the object of the recording being only to guard against a subsequent fraudulent transfer of the same property to an innocent purchaser for value.

The earlier modes of conveyance at the common law, besides their notoriety, and in part as a consequence thereof, had the extraordinary operation of transferring a greater estate in the land than the transferor himself had. That is to say, a tenant for life or years might by feoffment convey the premises in fee simple to a stranger. It is true the fee thus conveyed was a defeasible one; but it placed the landlord—reversioner or remainderman—in the situation of a disseisee, and forced him into the disadvantageous position of a plaintiff seeking to recover his land from one who claimed it under a notorious public conveyance. This was called a "tortious," or wrongful, conveyance, and the term "tortious" was thus applied to all the earlier modes of alienation which possessed this curious power. Conveyances by deed, on the other hand, have never been attended with these consequences, have never possessed a tortious operation, and have therefore been distinguished as "innocent" conveyances. Whatever they may purport to do, they pass only such interest as the grantor can lawfully convey. All modes of conveyance are now of this character, the older conveyances and the tortious effect of them having been done away with, both in England and in the United States, by statute. A curious survival of this obsolete and discredited doctrine appears in the modern American doctrine of conveyance by estoppel (q.v.). Notwithstanding the improvements which have been effected in recent years in the substitution of secret for notorious conveyances and the simplification of the former, the conveyance of land continues to be a much more cumbrous, uncertain, and expensive operation than the transfer of personal property. Many suggestions have been made looking to the elimination of these objections and the assimilation of the two species of property in this respect, and in several of the United States and in some of the British colonies different systems for achieving these objects have been adopted and are now on trial. These will be explained under the titles *LAND TRANSFER*; *REGISTRATION OF TITLE*. See the several titles of the various modes of transfer referred to in this article, and in addition, *ALIENATION*; *CONVEYANCING*; *TITLE*; *WARRANTY*; and the authorities there referred to.

CONVEYANCING. The act or art of preparing the deeds or instruments used for the transfer of property from one person to another. As such writings not only form the evidence of the right of the person possessing or claiming possession of property, but do in themselves constitute the title thereto, it is of the greatest importance that the conveyancer employed to prepare them should be possessed of a competent knowledge of the law and have the skill required to frame them in such a form as clearly to express and attain the object intended. In the early stages of society there is no call for the profession of a conveyancer; property is held in right of occupancy, without any written title, and even lands are conveyed from one to another without writing, the new owner being usually put in possession in presence of witnesses called for the purpose, by some symbolical form, such as the delivery of earth and twigs.

In the early history of the Jews the symbolical mode of transferring title prevailed (Ruth iv. 7). But they subsequently developed a much more artistic system of conveyancing, making use of all the safeguards that are used in modern times, viz., writing, witnesses, subscribing, sealing, and recording the documents (Jer. xxxii. 9-12). In Rome, as elsewhere, early transfers of property, whether land or goods, were of a ceremonial character. Later, a distinction was made between property capable of transfer by a simpler process (*res nec mancipi*) and such as could be effectually transferred only by the older and more formal method (*res mancipi*). It was not until Justinian's reign that the distinction between the two classes of property was abolished and a simple form of conveyance made sufficient for both.

Strictly speaking, the term "conveyancing" has no application to the various modes by which the title to chattels is transferred. These processes have almost always been of the simplest character, and do not usually call for expert knowledge or for elaborate writings to render them safe and effective. It is to the feudal system of land tenure, and to the complexities and refinements which it introduced into the simple notion of ownership, that we owe the difficulties and dangers which attend the transfer of title to land at the present time. As the feudal system nowhere exercised a stronger and more persistent influence than in England, so there is no country in Europe in which the conveyance of lands is as complicated and precarious an undertaking as it is in that country and in most of the United States. The number and variety of estates and other interests which may exist at one and the same time in the same parcel of land, and the diversity of circumstances under which these varied interests may arise, may be transferred and extinguished, have combined to make conveyancing one of the most technical and difficult branches of the work of the legal profession. In England it has resulted in the development of a special branch of lawyers who are known as "conveyancers." In the United States the process of specialization has not gone so far as that, the business of conveyancing being still for the most part in the hands of the profession at large or latterly, in the larger cities, in those of title-guarantee companies, which generally employ a large force of specially trained lawyers for the purpose.

The process through which the conveyancer

must go may be briefly described. He has first to make a careful search of the public records and from these to prepare an abstract (q.v.) of the title to the land in question. He must then examine with the greatest care all of the documents constituting the chain of title, in order to determine their validity and sufficiency. He will then be prepared to draw up the appropriate document to effect the transfer desired—which may be a deed of trust, a marriage settlement, a grant of the lands, or a last will and testament. In England, where no system of general registration of land titles is in force, the conveyancer has recourse to the original documents of title, which are carefully preserved and transferred with the land.

The complexity, uncertainty, and expense of the old method of conveyancing have long called for radical reform. In England, in the United States, and in Canada land-transfer reform associations exist, and are vigorously pushing for legislation in this direction; something has already been achieved, but much remains to be done. Few even of professional conveyancers would deny the truth of the statement made by the Duke of Marlborough in the *Fortnightly Review*, that heretofore "in every country the theory of the land laws has depended on the fact that land was never intended to be dealt with by free commerce and barter, and its sale and exchange have at all times been surrounded with legal difficulties of every description." As property is subdivided into smaller and smaller portions, and as the number of conveyances which make up the chain of title to a piece of real estate continually increases, the difficulty and cost of establishing a clear title become more and more burdensome. So great has the task of searching and verifying titles become in New York and other large cities that land-title guarantee companies have been formed, which insure purchasers and mortgagees against flaws in titles.

In the United States the system of conveyancing generally adopted is that by deeds of grant, or bargain and sale; many States have enacted statutes simplifying the older methods, and several prescribe an exact form of deed, defining the legal effect of the specific words of conveyancing, limiting, conditioning, and so on. It follows that the laws of the States are not uniform, but the essentials of a conveyance by deed are practically the same, requiring that it be in writing, be signed and sealed by the grantors, be acknowledged before a notary or other officer authorized by the statutes, and be actually delivered. The direction which all present agitation for reform in conveyancing is taking is that pointed out by the success of the Torrens system of Australia. The main principle in that system is the registration of *titles* as distinguished from the registration of deeds. It was introduced first in South Australia about 1857 by Sir Robert Richard Torrens, was eminently successful practically, and was afterward adopted in the other Australian colonies and elsewhere. Under it the ownership passes only on the filing, in the proper registry office, of the title; thus the actual transfer and the public notice of it are simultaneous, and the records of the office cannot be impeached by flaws in the conveyance itself, nor can a purchaser be deceived by the existence of a deed not recorded and of which he could have no knowledge. The system of registration is a very simple one; a

special folio of the record is devoted to a single piece of land, and there in one place and together are recorded all transfers and transactions affecting the title of that piece of land or forming a charge on it; and, we repeat, the title to that land can shift only upon the registration itself. The government holds to the landowner under this system much the same relation that a corporation issuing certificates of registered stock holds to the purchaser thereof, i.e., the transfer of such stock certificates is made on the books of the company and takes effect only upon new entry therein. Under the Torrens system a "Master of Titles" is intrusted with the duty of seeing that the transfer is regular and is properly executed. A guarantee fund is established by the state to compensate any persons injured by errors of any kind. The great merit of this system is that, once established, it makes title certain and absolute, and obviates research in ancient conveyances. In Canada the system has been tried—though in a limited and imperfect form—in Toronto, and there is a strong agitation for its universal adoption under a compulsory law. In England a Land Transfer Reform Bill was introduced in 1875 by Lord Cairns, and passed, but in a mutilated and altogether unsatisfactory form; in 1882 a second act was passed simplifying the art of conveyancing and leading the way towards a general reform; in 1889 Lord Salisbury's government introduced a bill making the Torrens system compulsory, which was defeated only after its third reading and by a very small majority. In New York an Act was passed and went into effect in January, 1891, which provided for a reformed or block scheme of indexing conveyances to supplant the old system of consecutive registration of deeds indexed only by the names of the parties thereto. This is also a step in the direction of the Torrens system of registration. A voluntary Torrens system has been adopted in several of the States of the American Union, but the preliminary work of title registration is so great and attended with so much expense that little has yet been done to bring the system into extended use.

Consult: Leonard A. Jones, *Forms in Conveyancing and General Forms* (5th ed., Indianapolis, 1899); Wolstenholme, *Forms and Precedents Adopted for Use under the Conveyancing Acts* (5th ed., London, 1891); Sheppard, *The Touchstone of Common Assurances, etc.* (Amer. ed., Philadelphia, 1840-41); Greenwood, *Manual of the Practices of Conveyancing* (8th ed., London, 1891); Elphinstone, *Introduction to Conveyancing* (5th ed., ib., 1900); Hunter, *The Dominion Conveyancer* (Toronto, 1893); Brewster, *Conveyance of Estates in Fee by Deed* (Indianapolis, 1904).

CONVEYOR. A device for moving or transporting freight, either in bulk or in packages, for a limited distance. It is much used for grain, coal, ore, and the like, in the form of an endless belt or band passing over supporting pulleys. The edges are turned up by guiding pulleys to prevent loss of material sidewise. The belt may discharge endwise over the last pulley as it passes over it and changes direction; or the charge may be thrown off sidewise by a deflecting guide. Or, the conveyor may be an endless chain with buckets, which dump at a designated point. The belt conveyors usually run at a relatively high speed; the bucket conveyors must move more slowly, but have the

advantage that they can serve as elevators also. Conveyors for packages and small freight are usually belts or in slat form in terminals and warehouses, or convey parcels from store departments to the delivery-department vehicles. Conveyors are used in power plants for coal from bins to furnaces, and for ashes from the ash pits to the discharge carts.

CONVICT (Sp., Portug. *convicto*, from Lat. *convictus*, p.p. of *convincere*, to convict, from *com-*, together + *vincere*, to conquer). A person found guilty, after due trial, of a criminal offense; in general use applied only to those convicted of felony or serious crimes, not to those guilty of petty offenses. The system used by a country in dealing with convicts is termed the convict system. In Europe in the Middle Ages the punishments inflicted upon criminals were cruel and brutal. Wholesale execution and mutilation gave way to transportation to colonies in the seventeenth century. Down to the time of the Revolution convicts were transported from Great Britain to the English Colonies in America; after the Revolution transportation to Australia came into vogue and continued until near the middle of the nineteenth century. In Russia transportation to Siberia was a favorite mode of disposing of convicts until 1900, when the system, in its essentials, was abandoned. Transportation is still a part of the French penal system, although it is rarely employed. Confinement in prisons, with or without hard labor, enforced labor on public works, or, under a gradually vanishing system, on private works under lease or contract, are the prevailing modes of disposing of convicts. In some jurisdictions, as a reward for good behavior, convicts are given their liberty under parole. Consult: Drähts, *The Criminal* (New York, 1900); Whitin, *Penal Servitude* (ib., 1912); Aschaffenburg, *Crime and its Repression* (Boston, 1913). See CONVICT LABOR, CRIMINOLOGY; PENOLOGY; PRISONS.

CONVICT LABOR. In all penitentiaries the work of keeping the institution in good order and carrying on the domestic arrangements is done by the prisoners. In addition, repairs and improvements, such as constructing new buildings, are often made by inmates under expert direction. This would not furnish sufficient employment to keep the prisoners occupied. For the sake of the convict as well as for the pecuniary returns, it is customary to employ the prisoners in productive enterprises. In America the following general systems prevail.

In the lease system the convicts are leased to contractors for a fixed sum and period, the entire responsibility for the care and safekeeping of the convicts devolving upon the contractors. This system may reduce the cost to the State, but it tends to great abuses and should be abolished. It prevails only in some of the Southern States.

The contract system exists in two forms. In the first the labor of the convicts is furnished to contractors for a fixed sum, the contractors personally directing the employment in the institution. The raw material and machinery are furnished by the contractor, though in some cases the State furnishes the latter. In the second form, the piece-price system, the contractor furnishes the material and pays a stipulated price for the finished product. The direction of the industry is in the hands of the prison officials. The advantage of this form is that it

avoids the possibility of trouble coming from the presence in the institution of employers who are not directly responsible to the authorities.

The contract system has been in general use. It has many advantages. The industry is managed by experts who can buy and sell to better advantage than can the warden, who, presumably, is not so well posted. Moreover, the State is not subject to loss because of gluts in the market or because of official ignorance or duplicity. It necessitates no great investment in expensive machinery. It has furnished steady employment to the prisoners and has reduced appreciably the net cost of maintenance.

There are, however, serious objections to the plan. When it involves the presence of outside overseers, it may seriously interfere with prison discipline. From an educational standpoint the highly developed industry interferes with the training of the individual convict. This applies with special force to the younger prisoners. Employers have condemned the system on the ground that the cheap labor gave the contractor an unfair advantage. Labor unions have objected because they felt that it had a tendency to lower wages. The objections have weight. While the total of prison labor is but a small part of the labor of the country, the introduction of special industries may easily depress and unfairly compete with similar local industries.

For these reasons the contract system is losing ground and is giving place to the public-account system. The State furnishes the plant and materials and conducts the entire business through its officials. Any profits go to the State, and any loss is borne by it. Products are sold upon the open market, or, as in a number of States, only such articles may be made as will be utilized in other public institutions or in the various State departments. Under this system the individual prisoner may be employed as seems for his best interest. Generally speaking, this plan is probably the best yet proposed. In recent years a strong tendency has developed to employ convicts, without the intervention of a private contractor, on the highways and other public works. Experiments with the system were first made in Colorado, in 1908. Oregon, New Mexico, Arizona, and Utah now use this system. Convicts thus employed are not required to wear prison garb, and they are placed wholly on their honor, working under the direction of an unarmed foreman. The results of this system have been highly favorable. In Colorado, in 1911-12, convicts thus employed built 157 miles of road at a cost of \$298 a mile, or one-fifth the normal contract cost. Only one in 100 has tried to escape. Similar results have been attained in Oregon.

The advantages of employment upon the public highways are (1) physical improvement in the persons so employed, (2) gain in self-respect, with increased probability of reform, (3) solution of the problem of competition with free labor. Usually convicts so employed are given special inducements to good behavior, such as reduction in term and wages, which may either be paid to the dependents of the men under sentence, or may be reserved for them until their discharge. The system of wage payment to convicts has been established in several States in the United States and has also been tried in France, Germany, and England. It is gaining ground and may be expected to become practically universal, since it increases the efficiency

of convict labor and renders easier the work of reformation. Consult: *United States Industrial Commission Report on Prison Labor* (Washington, 1900); *Proceedings of National Prison Association* (Pittsburgh, 1898, 1899); Henderson, *Introduction to Study of Dependents, Delinquents, and Delinquents* (Boston, 1893); Henderson, *Outdoor Labor for Convicts* (Chicago, 1907); Whitin, *Penal Servitude* (New York, 1912). See PENOLOGY; CRIMINOLOGY.

CONVOCA'TION (Lat. *convocatio*, from *convocare*, to call together, from *com-*, together + *vocare*, to call, from *vox*, voice). An assembly of the clergy of the Church of England, analogous in many respects to Parliament, at the same time with which it usually meets. As a factor in the development of English institutions, it is of great interest, being in some shape perhaps older than Parliament, into which attempts were made to incorporate it in the reigns of Edward I and Edward II. Convocation formerly exercised the right of enacting ecclesiastical legislation and also of voting subsidies to the crown; but the former right was greatly restricted under Henry VIII and by later acts of Parliament, while the latter was abandoned in 1664, since which time the clergy have been taxed like other citizens. Certain convocations are of importance in the history of both church and state in England; in particular that of 1529, which reasserted the royal supremacy; and declared that "the Bishop of Rome has not, in Scripture, any greater jurisdiction in the kingdom of England than any other foreign bishop"; that of 1562, which confirmed the Articles of Religion; that of 1603, which enacted an important body of canons; and that of 1661, which completed the revision of the Book of Common Prayer. About the beginning of the eighteenth century a factious spirit prevailed, so that the sittings of the Lower House were distinguished by contention with the bishops. Convocation was prorogued in 1717, and not again assembled until the revival of church life in the nineteenth century caused a demand for the renewal of its sessions. By the influence of Bishops Wilberforce, of Oxford, and Philpotts, of Exeter, the Convocation of Canterbury reassembled in 1852 and that of York in 1856, since which time their meetings have been regularly held. The provinces of Canterbury and York have each a convocation of its own. The Upper House is composed of the diocesan bishops, the Lower of bishops suffragan, deans, archdeacons, and certain representatives of the lower clergy, known as proctors. Convocation is relected with every new Parliament, and now commonly meets three times a year. While Convocation has at present no legislative functions, its discussions are of great interest to members of the Church of England. A "House of Laymen" has recently been organized, which, while not constitutionally forming a part of convocations, discusses similar topics on parallel lines. In 1905 was formed the Representative Church Council, composed of joint sessions of both convocations, together with the House of Laymen. Consult: Trevor, *The Convocations of the Two Provinces: Their Origin, Constitution, and Forms of Proceeding, with a Chapter on their Revival* (London, 1854); Lathbury, *A History of the Convocation of the Church of England* (ib., 1842; 2d ed., 1853); Whitehead, *Church Law* (ib., 1872).

In the University of Oxford the term "Convocation" is applied to the assembly composed of

all masters of arts, nonresident as well as resident, which finally accepts or rejects the statutes which have passed the narrower governing bodies, the Hebdomadal Council and Congregation. See OXFORD UNIVERSITY.

CONVOLVULACEÆ (Neo-Lat. nom. pl., from Lat. *convolvulus*, bindweed, from *convolvere*, to roll together, from *com-*, together + *volvere*, to roll). A family of dicotyledonous plants, the morning-glory family, comprising 45 genera and about 1000 species, chiefly displayed in the tropics. They are annuals or perennials, many are twining or climbing in habit, and one genus, *Cuscuta*, is a climbing parasite. (See DODDER.) In many the stems contain a milky juice, and some have tuberous roots which are of economic value as furnishing jalap, scammony, sweet potato, etc. Some are noted for their beautiful flowers, as the morning-glory. The leaves are generally alternate and without stipules. The calyx is five-parted and the corolla with a five-lobed and plaited limb which is usually valvate, sometimes convolute. The stamens are inserted within the corolla, alternating with its lobes. The ovary is free and consists of two (rarely more) carpels and bears two or more ovules. The fruit ripens into a berry, nut, or capsule.

CONVOLVULUS (Lat., bindweed), or BINDWEED. A genus of plants, the type of the family Convolvulaceæ. This genus contains nearly 150 species, herbaceous and shrubby, generally with a twining stem and milky juice; large and beautiful flowers. The plants of this genus are very abundant in the tropics, but comparatively rare in cold climates. Many are cultivated as ornamental plants, particularly species of *Convolvulus* and *Ipomœa*, the latter being commonly known as "morning-glory." Some species have large farinaceous roots, capable of being used as food, of which the sweet potato (q.v.), or batatas, is the most important. Two or three species are common in the eastern United States and are called "bindweed." *Convolvulus arvensis* is a troublesome weed in some sandy soils near the coast, and *Convolvulus sepium* in richer soils. The former has rose-colored fragrant flowers, the latter large white flowers. Both are ornamental: the latter is now often planted to cover posts and trellises. *Convolvulus scammonia* yields scammony, and the root of *Ipomœa pandurata* is used as a purgative in the United States. *Convolvulus scoparius*, a shrubby species, native of the Canary Isles, yields one of the kinds of wood called "rosewood," which has a strong smell of roses. *Ezægonium purga*, formerly known as *Ipomœa jalapa*, of this order yields jalap, a well-known cathartic. It abounds in Mexico. For illustration, see Plate of DICOTYLEDONS.

CONVOY (Fr. *convoi*, from *convoyer*, to convey). The name given to one or more ships of war appointed to protect a fleet of merchant vessels against the attacks of an enemy or pirates. If a merchant ship part company with the convoy, or neglect to obey the signals, all claims of insurance are forfeited. The name is sometimes applied to the merchant vessels so escorted. In the military service a convoy is, properly speaking, a train of wagons laden with provisions or warlike stores; the term, however, is applied also to the detachment of troops, or escort, appointed to protect such a train.

CONVULSION (Lat. *convulsio*, convulsion). A symptom of disease occurring in sudden at-

tacks during which the patient generally loses consciousness; the muscles of a part or of much of the body are contracted and relaxed involuntarily, in spasmodic and irregular movements; the eyes are generally open, the eyeballs turned up or to one side; the teeth are set tight together; the tongue or cheeks are frequently bitten; the breathing is at first arrested, then labored and deep; the face is generally red, and the saliva oozes from the mouth as froth. In epilepsy (q.v.) the convulsions are as just described, and the patient generally sleeps immediately after them before regaining consciousness. In hysteria (q.v.) there is less writhing and more rigidity, the patient is not entirely unconscious in most cases, the cheeks remain pale, and he regains consciousness after a period of confusion, without sinking into a sleep; the tongue is not bitten, and froth does not issue from the mouth. Uræmic convulsions are very similar to those of epilepsy. Convulsive seizures accompany many diseases. They may be due to cerebral pressure, as in brain tumors, tertiary syphilis, cerebral hemorrhage, thrombosis, or embolism (see APOPLEXY), or extracerebral hemorrhage and meningitis; certain nervous diseases, e.g., general paresis, epilepsy, and hysteria; certain general toxæmias as uræmia, the puerperal state, lead poisoning, acute and chronic alcoholism. Convulsions in children (spasms) are likely to arise from slighter causes than in adults. Besides the diseases mentioned above, which may occur at any age and cause convulsive seizures, the following causes are operative in infants and young children: dentition, acute inflammations of the ear, gastrointestinal irritation (overloading the stomach, worms, etc.), the onset of the acute exanthemata; birth injuries, tubercular meningitis, and rickets.

In cases of infantile convulsions the clothing should be removed and the patient immersed in a hot bath up to the neck for 10 or 15 minutes or till the limbs relax. An enema of soap-suds will always be of advantage to a child. The epileptic patient should never be grasped and held by any one, but should be protected from falling from the bed with cushions and pillows. The tongue should be protected from being bitten by being thrust back into the mouth, or by a rubber eraser inserted between the teeth. The patient should not be allowed to bury the nose and mouth in the pillows.

CONVULSIONARIES (Fr. *convulsionnaires*, from Lat. *convulsio*, convulsion, from *convellere*, to convulse, from *com-*, together + *vellere*, to pluck). A fanatical sect of Jansenists who sprang up in France about 1730. Their meeting place was the churchyard of Saint-Médard, in a suburb of Paris, where was the tomb of a certain Francis of Paris, who died in 1727 and was reckoned very holy by the Jansenists on account of his extravagant asceticism. At this tomb people began to gather for preaching and prayer. Miracles and cures are also alleged to have been performed, for proof of which we are referred to a work written by Carré de Montgeron, a member of the Parliament of Paris, and entitled *La vérité des miracles opérés à l'intercession de M. de Paris et autres appellans* (3 vols., Paris, 1737). "They threw themselves into the most violent contortions of body, rolled about on the ground, imitated birds, beasts, and fishes, and at last, when they had completely spent themselves, went off in a swoon." Some

of the phenomena seem to have been genuine and of a sort that would now be ascribed to hysteria. In 1733 the King issued an order for the imprisonment of these fanatics, but it was found impossible to put a complete stop to the mischief. They brought Jansenism into so much disrepute that Voltaire declared the tomb of Francis to be the grave of Jansenism. Consult P. F. Mathieu, *Histoire des miracles et des Convulsionnaires de Saint-Médard, précédée de la vie du diacre Paris, d'une notice sur Carré de Montgeron et d'un coup d'œil sur le Jansénisme* (Paris, 1864).

CONWAY. A river in North Wales, 30 miles long, noted for its scenic beauty. It rises in a small mountain lake and flows between Llanrwst and Trefriw into the Irish Sea. At Conway it is half a mile broad at spring tides, which rise here 21 to 24 feet. The Conway has been famous for its pearls since Roman times.

CONWAY, or ABERCONWAY. A seaport market town and municipal borough of Carnarvonshire, North Wales, beautifully situated on a steep slope on the left bank of the Conway, 22 miles northeast of Carnarvon (Map: Wales, C 3). It is surrounded by triangular walls, 12 feet thick, with 21 towers and battlements. The principal streets are wide and regular. Here is situated St. Mary's Church; it is also the seat of the Royal Cambrian Academy of Art. Conway Castle, one of the noblest ancient structures in Britain, stands on a precipice overlooking the river. It was built in 1284 by Edward I to check the Welsh. Its walls are 12 to 15 feet thick, with eight vast towers, four of which are each surmounted by a slender turret. Inside is a great hall, called Llewelyn's. Pop., 1891, 3400; 1901, 4681; 1911, 5242. Outside the town can be found evidences of the Roman camp, Conovium, in the ruins of baths, roads, and pillars. Consult *Historical Sketch of Conway Castle and its Environs* (Carnarvon, 1852).

CONWAY. A city and the county seat of Faulkner Co., Ark., 30 miles north by west of Little Rock; on the St. Louis, Iron Mountain, and Southern Railroad (Map: Arkansas, C 2). It is the seat of Hendrix College (Methodist Episcopal, South), organized in 1884. Arkansas State Normal School, and Central Baptist College for Women, opened in 1892. Conway has an extensive cotton trade, lumber, flour, and cottonseed-oil mills, cotton compress, broom factory, and excelsior works. The city was settled in 1871 and incorporated three years later. It is governed by a mayor, who is elected every two years, and a council. The electric-light plant, water works, and sewerage system are owned and operated by the municipality. Pop., 1890, 1207; 1900, 2003; 1910, 2794.

CONWAY. A town in Carroll Co., N. H., containing the villages of Kearsarge, North Conway, Conway, and Conway Centre, about 60 miles (direct) north-northeast of Concord, on the Saco River and on the Boston and Maine Railroad (Map: New Hampshire, N 5). The village of North Conway is famed for beautiful scenery and is a popular summer resort. Conway is the centre of an extensive granite industry and has a ribbon-peg factory, spool mill, box factory, and lumber and canning interests. The water works are municipally owned. Pop., 1890, 2331; 1900, 3154; 1910, 3413. Consult Mrs. M. E. Eastman, *East of the White Hills*.

CONWAY, HENRY SEYMOUR (1721-95). An

English field marshal, a second son of Francis Seymour, first Lord Conway. He was aid-de-camp to the Duke of Cumberland at the battles of Fontenoy (1745) and Culloden (1746). On March 30, 1759, he was appointed lieutenant general, and he served in 1761-63 under the Duke of Brunswick in Germany. In 1757 he was in the unsuccessful Rochfort expedition. For his attitude in Parliament in the Wilkes case he was deprived of his military command by the King, which resulted (1765) in the crown's abandoning its right to remove army officers for what they did in Parliament. He persistently opposed the war with America, and on Feb. 22, 1782, in an address to Parliament, urged the advisability of discontinuing aggressive warfare against the American Colonies. Shortly after the resignation of Lord North, he became commander in chief of the army (March 27, 1782).

CONWAY, HUGH. The literary pseudonym of Frederick John Fargus, part of which may have been first suggested to him by his student life on the school frigate *Conway*.

CONWAY, MONCURE DANIEL (1832-1907). An American clergyman, historian, and ethical writer. He was born in Stafford Co., Va., and was graduated at Dickinson College (1849) and at the Harvard Divinity School (1854), having studied law and been a Methodist minister in the interval. He imbibed humanitarian and rationalistic ideas and returned to Virginia to preach them, but was obliged to leave the State. He then took charge of a Unitarian church in Washington, D. C., but, too outspoken against slavery, was forced to go to Cincinnati, where he preached, wrote books, and edited *The Dial*. There, and later in Boston as editor of *The Commonwealth*, he urged emancipation, and in 1863 went to England to explain the cause of the war. He was minister of the ultraliberal South Place Chapel, London, from 1863 to 1884. At the close of the last century he returned to America and resided in New York City. Among his volumes are: *The Rejected Stone* (1861); *Idols and Ideals* (1877); *Demonology and Devil Lore* (1878); *The Wandering Jew* (1881); as well as biographies of *Edmund Randolph* (1888), *Thomas Carlyle* (1881), *Emerson at Home and Abroad* (1882), and *Hawthorne* (1890). His edition of the writings of Thomas Paine (4 vols., 1894-96), his life of Paine (2 vols., 1892), his *Autobiography* (1904), *My Pilgrimage to the Wise Men of the East* (1906), and *Addresses and Reprints, 1850-1907* (Boston, 1909), are his most important works.

CONWAY, ROBERT SEYMOUR (1864-). An English classical philologist, born at Stoke Newington. He received from Gonville and Caius College, Cambridge, the degrees of B.A. (1887), M.A. (1891), Litt.D. (1898). He was fellow of Gonville and Caius College in 1888-94, classical lecturer in Newnham College in 1887-93, and professor of Latin, University College, Cardiff, Wales, in 1893-1903, when he took the corresponding chair in Victoria University, Manchester. He wrote *Verner's Law in Italy* (1887) and *Vergil, an Inaugural Lecture* (1903), collaborated in the translation of *Brugmann's Comparative Grammar* (1888-95), and edited *The Italic Dialects* (1897). He became a frequent contributor to classical periodicals. Among the latter papers may be mentioned one on Vergil's fourth Eclogue, the so-called Messianic Eclogue, printed in *Vergil's Messianic Eclogue, its Mean-*

ing, Occasion, and Source (London, 1907). He published also *Dialecticarum Italicarum Exempla Selecta in Usum Academicum Latine Reddita* (1899) and *The Restored Pronunciation of Greek and Latin* (1909).

CONWAY, THOMAS (1733-c.1800). An Irish soldier of fortune. He was educated in France, entered the French army, and had attained the rank of colonel when, early in 1777, he came to America with a recommendation from Silas Deane, and offered his services to Congress. He was appointed a brigadier general in May of this year, served at Brandywine and Germantown, where he led the main attack, and later in the year was made inspector general, with the rank of major general, contrary to Washington's wishes. He was the chief conspirator in the "Conway Cabal" (q.v.), for which, however, he no doubt got more than his share of blame, and upon the discovery of his intrigue resigned from the army in 1778. Soon afterward, on July 22, he was wounded in a duel by General Cadwallader, who challenged him because of his attacks upon Washington. Conway then returned to France, reentered the army, and in 1784 was appointed Governor of Pondicherry and the French settlements in Hindustan. In 1792 he was appointed commander of the Royalist forces in the south of France, but on the success of the Revolutionists fled from the country.

CONWAY, SIR (WILLIAM) MARTIN (1856-) An English art critic and mountain climber, born in Rochester, the son of William Conway, afterward canon of Westminster. He was educated at Repton and at Trinity College, Cambridge; was a university-extension lecturer in 1882-85, professor of art at University College, Liverpool, in 1885-88, and Slade professor of fine arts, Cambridge, in 1901-04. He early became an enthusiastic mountaineer, was president of the Alpine Club in 1902-04; was the first to reach an altitude of more than 23,000 feet—in the Karakoram Himalayas in 1892; and explored Spitzbergen in 1896-97 and the Bolivian Andes and Tierra del Fuego in 1898. He was knighted in 1895. His principal books on art are: *The Woodcutters of the Netherlands in the Fifteenth Century* (1884); *The Artistic Development of Reynolds and Gainsborough* (1886); *Early Flemish Artists* (1887); *Literary Remains of Dürer* (1889); *The Dawn of Art* (1891); *Early Tuscan Artists* (1902). On travel and mountaineering he wrote, besides contributions to the Badminton Library, guidebooks to the Pennine and Lepontine Alps; *Climbing and Exploration in the Karakoram Himalayas* (1894); *The Alps from End to End* (1895); *The First Crossing of Spitzbergen* (1897); *The Bolivian Andes* (1901); *Aconcagua and Tierra del Fuego* (1902); *The Alps* (1904); *Early Voyages to Spitzbergen* (1904); *No Man's Land, a History of Spitzbergen* (1906).

CONWAY CABAL, THE. In American history, the name given to an intrigue, organized under the leadership of Thomas Conway (q.v.), in 1777, during the Revolutionary War, for the purpose of bringing about the supersession of Washington, as commander in chief of the American armies, by Gen. Horatio Gates. With Conway were associated such men as Gates, Charles Lee, Thomas Mifflin, and Benjamin Rush, besides several other army officers and members of the Continental Congress, who charged Washington with gross incompetence and favoritism, and in particular endeavored to prove the superiority

of Gates over Washington as a commander by contrasting the victories of the former at Saratoga with the almost contemporaneous reverses of the latter at Brandywine and Germantown. The faction gained sufficient power to secure the appointment of Gates as head and of Thomas Mifflin as a member of the Board of War and the promotion, against Washington's emphatic advice, of Conway to the rank of major general and to the position of inspector general; but they did not succeed in retaining any considerable following, and in a few months their schemes fell through, and Conway was virtually forced to leave the service (1778). A good account of the intrigue is given in vol. ii of Fiske's *The American Revolution* (Boston, 1893).

CON'WELL, RUSSELL HERMAN (1842-). An American Baptist clergyman. He was born at Worthington, Mass., and was educated at Wilbraham Academy and at Yale and Albany law schools. During the Civil War he served in the Union army (1862-65) and rose to the rank of lieutenant colonel. After the war he devoted himself to the practice of law. He was correspondent in Germany of the *New York Tribune* and the *Boston Traveler* from 1868 to 1870. After his ordination to the ministry in 1879 he occupied the pulpit of Grace Baptist Church, Philadelphia (1881-91). He founded and became president of Temple College (established 1888), and the Samaritan Hospital was also established by him (1890). In 1891 he became pastor of the Baptist Temple in Philadelphia. The following are his principal works: *Why the Chinese Emigrate* (1871), *Woman and the Law* (1875); *Lives of the Presidents* (1878); *Acres of Diamonds* (1888; 1905); *Life of C. H. Spurgeon* (1893); *The New Day* (1902); *How to Live the Christ Life* (1912). Consult his *Life*, by Burr (Philadelphia, 1905).

CONYBEARE, kün't-bär, FREDERICK CORNWALLIS (1856-). An English Orientalist. He was educated at Tonbridge School and at University College, Oxford, of which he became scholar in 1875 and fellow and prelector in 1881. He was made a fellow of the British Academy in 1903, an officer of the French Academy in 1906, and honorary doctor of theology at Giessen in 1907. In his special field, Armenian language and literature, he came to be recognized as probably the foremost authority of his time; but he wrote besides on religious history. His published works include: *Ancient Armenian Texts of Aristotle* (1892); *The Key of Truth, a Manual of the Paulician Church of Armenia* (1898); *Roman Catholicism in International Politics* (1901), which, with his writings on the Dreyfus case, made him very unpopular among continental clericals and anti-Semites; *Ritule Armenorum* (1905); *Old Armenian Texts of Revelation* (1906); *Myth, Magic, and Morals: a Study of Christian Origins* (1909); *A History of New Testament Criticism* (1910); *A Catalogue of the Armenian MSS. of the British Museum* (1912); and translations of *Philostrophus' Life of Apollonius of Tyana* (1912) and *Heliodorus' Æthiopia and other Greek Romances* (1913).

CONYBEARE, kün't-bär, JOHN (1692-1755). An English clergyman. He was born at Pinhoe, graduated at Oxford, and was ordained priest in 1716. In 1730 he became master of Exeter College, of which he had previously been a tutor. He had attracted notice by two sermons, on *Miracles* (1722) and on the *Mysteries of the*

Christian Religion (1724). In 1732 he published his great work, *A Defense of Revealed Religion, a reply to Matthew Tindal's Christianity as Old as the Creation* (1730). Conybeare was appointed dean of Christ Church, Oxford, in 1732, and Bishop of Bristol in 1750.

CONYBEARE, JOHN JOSIAS (1779-1824). An English scholar. He was the grandson of the Bishop of Bristol and became professor of the Anglo-Saxon language (1807) and of poetry at Oxford (1812). He made some contributions to the literature of geology and chemistry, but is chiefly remembered for his devotion to Anglo-Saxon literature. His *Illustrations of Anglo-Saxon Poetry* (1826) was edited by his brother, William Daniel Conybeare.

CONYBEARE, WILLIAM DANIEL (1787-1857). An English geologist and clergyman, the younger brother of John Josias Conybeare. He was educated at Westminster and Oxford. While at the latter institution he devoted much time to the study of geology, and his researches in this science afterward procured for him the friendship of Buckland, De la Bèche, Elie de Beaumont, and many of the leading geologists of the time. He contributed several papers on various geological subjects to English periodicals and was admitted to membership in the Royal Society and the Geological Society of London, receiving from the latter the Wollaston medal. In 1844 he became dean of Llandaff, an office he retained until his death in 1857. His most important scientific work is *Outlines of the Geology of England and Wales* (1822), in which he cooperated with William Phillips.

CONYBEARE, WILLIAM JOHN (1815-57). An English clergyman and essayist, the son of Rev. William Daniel Conybeare (q.v.). He graduated at Cambridge in 1837, took orders four years later, became principal of the Liverpool Collegiate Institution in 1842, and in 1848 succeeded his father as vicar of Axminster. He wrote *Perversion; or, The Causes and Consequences of Infidelity*, a religious novel (1856); *Essays Ecclesiastical and Social* (1856); and, far more important, with Rev. J. S. Howson, *Life and Epistles of St. Paul* (1851), which is still a valuable biography.

CONYERS, kōn'yērz. A city and the county seat of Rockdale Co., Ga., 30 miles by rail east-southeast of Atlanta, on the Georgia Railroad (Map: Georgia, B 2). It is in a cotton-growing and granite-quarrying region and has an oil mill, cotton factory, bottling works, and a flouring mill. The water works are owned by the city. Pop., 1890, 1349; 1900, 1605; 1910, 1919.

CONZE, kōn'tse, ALEXANDER CHRISTIAN LEOPOLD (1831-1914). A German archaeologist. He was born at Hanover and was educated at Göttingen and Berlin. He was professor of archaeology at Halle (1863-69), Vienna (1869-77), and Berlin (1877-87). He was also director of the Berlin Museum and in 1887 received an appointment as general secretary of the German Archaeological Institute. His writings include chiefly, in addition to some general studies, the following descriptions of travel and excavations: *Reise auf den Inseln des thrasischen Meeres* (1860); *Archäologische Untersuchungen in Samothrake* (2 vols., Vienna, 1875-80); *Beiträge zur Geschichte der griechischen Plastik* (2d ed., Halle, 1869); *Die Ergebnisse der Ausgrabungen zu Pergamon* (Reports

1-3, Berlin, 1880-88); *Die Arbeiten zu Pergamon, 1886-1898* (Athens, 1899); *Die Kleinfunde aus Pergamon* (Berlin, 1902).

COO'DIES, THE. A name applied to the New York Federalists who favored the War of 1812. It was derived from Abimalech Coody, the pseudonym adopted, in his communications to the press, by Gulian C. Verplanck, the leader of the faction. Consult Hammond, *The History of Political Parties in the State of New York* (4th ed., Cooperstown, 1846).

COOK, MOUNT (called by the Maoris *Aorangi*, bright cloud of the sky). A mountain in the Southern Alps, on the South Island, New Zealand (Map: New Zealand, S. 1., C 4). It has an altitude of 12,349 feet and is regarded as the highest point of Australasia. Its top is covered with perpetual snow. The first ascent was made in 1882. Since then the mountain has been repeatedly ascended and explored.

COOK, ALBERT STANBUBROUGH (1853-). An American scholar, born at Montville, N. J. He graduated in 1872 at Rutgers College, studied at the universities of Göttingen and Leipzig, and in 1879-81 was associate professor of English at Johns Hopkins University. While professor of English (1882-89) in the University of California, he influenced the instruction in English in the entire State. In 1889 he was appointed professor of English language and literature in Yale University. He became an editor of the *Journal of Germanic Philology*, and published a valuable translation of Sievers's *Old English Grammar* (Boston, 1885). His publications further include: *The Phonological Investigation of Old English* (1888); *The Bible and English Prose Style* (1892); *The Art of Poetry* (1892); *First Book in Old English* (1894; 3d ed., 1903); *The Artistic Ordering of Life* (1898); *Biblical Quotations in Old English Prose Writers* (1904, 1913); *Higher Study of English* (1906); *Concordance to Beowulf* (1910).

COOK, CHARLES (1787-1858). An English Wesleyan clergyman, born in London. He was appointed in 1818 to the French mission of the Methodist church in Normandy and established Methodism in France. He engaged in a controversy with César Malan on predestination, which led to his work *L'Amour de Dieu pour tous les hommes*. Consult *Life of Charles Cook* (Paris, 1862), by his son.

COOK, CLARENCE CHATHAM (1828-1900). An American art critic and author, born in Dorchester, Mass. He graduated at Harvard in 1849, studied architecture, and spent several years in teaching. He was a contributor of articles on American art to the *New York Tribune*, from 1863 until 1869, when he was appointed Paris correspondent for the same paper and took up his residence abroad. He remained in Paris until the outbreak of the Franco-Prussian War, when he returned to New York and resumed his former relations with the *Tribune*. Cook was one of the earliest American art critics and on that subject, as well as archaeology, was an authority in his day. Besides his chief work, *The House Beautiful* (1878), he wrote *Central Park* (1869) and edited a translation of Lübke's *History of Art* (1878). From 1884 he edited *The Studio* for a number of years.

COOK, EDWARD DUTTON (1829-83). An English author and dramatic critic. He studied painting and engraving; with Leopold Lewis

wrote a melodrama, *The Dove and the Serpent*; in 1867-75 was dramatic critic of the *Pall Mall Gazette*, and from 1875 of the *World*. Of his works in fiction, the best known is *The Trials of the Tredgolts* (1864).

COOK, SIR EDWARD TYAS (1857-). An English journalist and author, born in Brighton. He was educated at Winchester and at Oxford (New College), where he was president of the Union. In 1882-85 he was secretary of the London Society for Extension of University Teaching. He was assistant editor and in 1890-92 editor (succeeding W. T. Stead) of the *Pall Mall Gazette*, and, after its purchase by William Waldorf Astor, in 1893 with many members of its staff took charge of Sir G. Newnes's *Westminster Gazette*. From 1896 to 1901 he edited the *Daily News*, and from then until 1912 he was on the staff of the *Daily Chronicle*, although devoting much of his time to writing on a variety of subjects. Among his books are: *Popular Handbook to the National Gallery* (1888; 7th ed., 1912), with notes from Ruskin's works and a preface by Ruskin; *Studies in Ruskin* (1890; 2d ed., 1891), with special attention to Ruskin's career as a teacher (Cook had been one of his pupils); *Popular Handbook to the Tate Gallery* (1898); *The Rights and Wrongs of the Transvaal War* (4th ed., 1902); *Popular Handbook to Greek and Roman Antiquities in the British Museum* (1903); *Memoir of Edmund Garrett* (1909); *Life of Ruskin* (1911); *Homes and Haunts of Ruskin* (1913); and *Life of Florence Nightingale* (1913). With Alexander Wedderburn he edited (1903-11) the Library Edition of Ruskin's works, *Letters and Life*; and he was knighted (1912) upon the completion of this definitive edition.

COOK, ELIZA (1818-89). An English poet, born in London. Her first volume, entitled *Lays of a Wild Harp*, she published in 1835, and, after writing considerably for periodicals, particularly the *Weekly Dispatch*, she published *Melania and Other Poems* (1838). In 1840-54 she edited *Eliza Cook's Journal*, much of whose contents was republished in *Jottings from my Journal* (1860). Her unpretentious verse, including, notably, "God Speed the Plough," "The Old Armchair," and "The Star of Glengarry," has been very popular among a wide circle of readers in both England and America. A complete edition of her poetical works appeared in London in 1870 and in New York in 1882.

COOK, FRANCIS AUGUSTUS (1843-1916). An American naval officer. He was born in Northampton, Mass., and in 1863 graduated at the United States Naval Academy. He then served for two years as an ensign in the western Gulf blockading squadron, attained the rank of commander in 1880, was in charge of the department of seamanship at Annapolis until 1883, and was inspector of ordnance at the Boston Navy Yard from 1889 to 1893. He was subsequently assistant to Rear Admiral Ramsay, chief of the Bureau of Navigation in Washington, and in 1896, with the rank of captain, took command of the cruiser *Brooklyn*. At the beginning of the war with Spain (1898) he joined the "flying squadron" under Commodore Schley, and took an important part in the battle of Santiago (q.v.), pursuing the *Cristóbal Colon* until she ran ashore at Rio Tarquino, when he received the surrender of her commander. At the close of the war he was relieved of sea duty at his own request and

was appointed to the United States Naval Examining Board. He was retired in 1903.

COOK, FREDERICK ALBERT (1865-). An American explorer who claimed to have reached the North Pole on April 21, 1908. He was born at Callicoon Depot, N. Y., graduated at New York University in 1890, and was surgeon of the Peary Arctic expedition of 1891-92, and of the Belgian Antarctic expedition of 1897-99. Upon his return in 1909 "from the Pole"—as he said—he was received with great honors at Copenhagen, Denmark, and then, hastening to New York, he at once began making large sums of money by his writings and lectures. Doubts soon began to arise as to the veracity of his story—his companion on the journey he made in 1906 to Mount McKinley, Alaska, made an affidavit that no ascent of that mountain was made as described in Cook's narrative, and the Eskimos who were supposed to have been his companions on the dash to the Pole told the Peary party that they had spent the winter of 1907-08 at Jones Sound. This was followed by the sworn statement of a man who had been hired to prepare for Cook a set of observations for latitudes and longitudes on his journey to the Pole, to send with his other data to the University of Copenhagen for examination. In the meantime Cook disappeared from view, and the learned scientists at Copenhagen decided that his proofs were not sufficient; but the sale of his book, *My Attainment of the Pole* (1909; 3d ed., 1913), was very large. In 1913-14 he lectured in England. In addition to numerous magazine articles he is author of *Through the First Antarctic Night* (1900); *To the Top of the Continent* (1908). See *North Pole and Bradley Land*, by E. S. Balch (1913).

COOK, GEORGE HAMMELL (1818-89). An American geologist, born at Hanover (Morris Co.), N. J. He graduated in 1839 at the Rensselaer Polytechnic Institute (Troy, N. Y.), was a professor there in 1842-46, and in 1853 became professor of chemistry and the natural sciences at Rutgers College. His chair was changed to that of chemistry, natural history, and agriculture in 1867, analytical chemistry, geology, and agriculture in 1878, and geology and agriculture in 1880. In 1864 he was appointed State geologist of New Jersey, and in 1880 director of the New Jersey Agricultural Experiment Station (Somerville, Somerset County). He published a *Geology of New Jersey* (1868), a work that is still regarded as a standard of reference.

COOK, CAPT. JAMES (1728-79). A celebrated English navigator. He was the son of a farm laborer; was born at Marton, Yorkshire; was meagerly educated at the village school, and at 12 years of age was apprenticed to a small shopkeeper in the fishing village of Staithes. Disagreeing with his employer, he applied to a firm of Whitby shipowners engaged in the Newcastle, Norway, and Baltic trades, and in their service soon rose to the rank of mate. In 1755, at the outbreak of the French war, he volunteered for the royal navy. Showing ability, in 1759 he was given a master's warrant, and, in command of the *Mercury*, proceeded to the North American station. During a winter at Halifax he diligently applied himself to the study of mathematics and astronomical navigation. The charts and observations which he made of the coasts of Newfoundland and Labrador, published in 1776-78 and distinguished

for their accuracy even to the present day, introduced him to the notice of the Royal Society, and this society intrusted him with the command of an expedition to the Pacific, to observe the transit of Venus. He left Plymouth on Aug. 26, 1768, and, after touching at Madeira and Rio de Janeiro, doubled Cape Horn and reached Tahiti on April 13, 1769, where the transit was successfully observed, June 3. On the return voyage six months were spent in sailing around and charting the coast of New Zealand, which had not been visited by Europeans for more than a century. In a similar way the eastern coast of Australia was examined and named New South Wales. The entire separation of Australia from New Guinea was determined. After a two months' stay at Batavia he returned by the Cape of Good Hope, and arrived in England, June 12, 1771. The important geographical results of this successful voyage won universal recognition, and two months afterward Cook received the rank of commander and an appointment to organize a new expedition for the discovery of the imaginary *Terra Australis Incognita*. He sailed with two ships from Plymouth, July 13, 1772, and, in a three years' cruise of over 20,000 leagues, encircled the Antarctic region from New Zealand to Cape Horn. His claim that there is no other great southern continent is not admitted by contemporary explorers, though his maps in many respects are still valuable for Antarctic navigation. He returned to England, July 30, 1775. Taught a lesson by a mortality of 46 per cent in his first voyage around the world, Cook had made such excellent hygienic arrangements that only one man out of 118 died during the cruise. His detailed account of the measures and precautions adopted were read before the Royal Society, which granted him the Copley gold medal for his important services to humanity and to the maritime world. Promoted to the rank of captain, he received an appointment at Greenwich Hospital, but shortly afterward he offered to command an expedition in search of a passage round North America from the Pacific. He sailed July 12, 1776, by way of the Cape of Good Hope, and spent the following year in the South Pacific. Thence he set sail for the north in January, 1778, and, after rediscovering the Sandwich Islands, reached America, and added to geographical knowledge by making an almost continuous running survey of the coast as far as Bering Strait, where, stopped by impenetrable ice, he returned to winter at the Sandwich Islands. Here he was brutally slaughtered, Feb. 14, 1779, by the natives in a sudden attack aggravated partly by the cowardice and neglect of one of his officers and Cook's own rashness in dealing with the natives. His death occasioned widespread regret, and the King pensioned his wife and children. An obelisk erected in 1874 marks the spot where he fell. A practical and scientific seaman, a sagacious commander, kind but strict with his crew, Cook was also distinguished by indomitable perseverance and decision. An account of Cook's first voyage appeared originally as part of Hawkesworth's *Voyages* (1773); the narrative of the second was written by Cook himself, under the title of *A Voyage Towards the South Pole and Round the World, Performed in His Majesty's Ships the Resolution and Adventure, in the years 1772, 1773, 1774, and 1775* (1777); the story of Cook's third voyage, partly written

by Cook himself and partly by Capt. James King, appeared in 1784. Consult: Wharton, *Captain Cook's Journal during his First Voyage round the World* (London, 1897); Synge, *Captain Cook's Voyages round the World* (ib., 1897); Besant, *Captain Cook* (ib., 1890); Kippis, *Life of Captain James Cook* (ib., 1788); *Narrative of the Voyages round the World Performed by Captain James Cook* (2 vols., ib., 1778); Kitson, *Captain James Cook* (ib., 1907).

COOK, JOHN (1805-92). A Canadian clergyman and educator. He was born at Sanquhar, Dumfriesshire, Scotland, and was educated at Edinburgh University. He was ordained to the Presbyterian ministry in 1835, but came to Canada in 1836, and was appointed pastor of St. Andrew's Church, Quebec. When the Established church of Scotland was divided by the secession of those who afterward organized the Free church, the movement likewise affected Presbyterianism in Canada; but Cook remained a member of the Established church and maintained a mediating attitude, seeking to heal the breach between the two divisions. He aided in establishing Queen's University, Kingston, which was founded in protest of sectarian educational privileges, was acting principal in 1857-60, its first chancellor in 1877-80, and for many years a trustee. He was largely instrumental in founding Morvin College, Quebec, in 1862, and was its first principal. In 1861 he became an active supporter of Presbyterian union in Canada, and after this was accomplished in 1875 became the moderator of the first general assembly.

COOK, JOSEPH (1838-1901). An American lecturer and author, born at Ticonderoga, N. Y. He studied at Phillips (Andover) Academy and at Yale, and graduated at Harvard in 1865. He then spent three years at Andover Theological Seminary, preached in various Congregational churches, spent two more years in study in Germany, and then settled in Boston, where in 1873 he began his "Boston Monday Lectures," which became very popular and which he continued until 1880, when he set out on a two years' lecturing journey round the world. In 1883 he resumed his Monday Lectures in Boston. In 1888 he founded a religious monthly called *Our Day*. He lectured on many subjects, both in Europe and in America, and had great vogue with a part of the religious public for the reason that all of his philosophical discourses were attempts to harmonize religion and science. He published: *Biology* (1877); *Marriage* (1878; 8th ed., 1891); *Labor* (1880); *Socialism* (1880; 6th ed., 1893); *Occident* (1884); *Orient* (1886); *The Higher Levels of Arbitration* (1900); *New Defenses of the Lord's Day* (1900).

COOK, MELVILLE THURSTON (1869-). An American botanist, born at Coffeen, Ill. He was educated at DePauw, Leland Stanford Junior, Chicago, and Ohio State universities. In 1894-95 he was principal of the high school at Vandalia, Ill. At DePauw he was instructor in biology in 1895-97 and professor from 1897 to 1904; for two years he headed the department of plant pathology and economic entomology at the Estacion Central Agronomica, Santiago de las Vegas, Cuba; from 1907 to 1911 he was plant pathologist of the Delaware Experiment Station at Newark, N. J., and thereafter he served as professor of plant pathology at Rutgers College and State plant pathologist. He is author of *Galls and Insects*

Producing them (3 vols., 1902-04) and *Disseases of Tropical Plants* (1912).

COOK, ORATOR FULLER, JR. (1867-). An American botanist, born at Clyde, N. Y. He was educated at Syracuse University, where he was in charge of the biology department in 1890-91. As agent of the New York Colonization Society he made explorations and investigations in Liberia in 1891-97, and he also served as professor of natural sciences in Liberia College during this same period and as president of the institution in 1896-97. In 1898 he became custodian and assistant curator of the United States National Museum. He had charge of plant importation by the United States Department of Agriculture from 1898 to 1900, when he took up the investigation of tropical agriculture. In 1904 he became professor of botany at George Washington University. He is author of various articles and reports on Liberia and African colonization, Porto Rico, tropical agriculture, botany, zoology, and evolution.

COOK, STANLEY ARTHUR (1873-). An English Orientalist, born in King's Lynn. He was educated at Gonville and Caius College, Cambridge, of which he became fellow and lecturer in Hebrew and Syriac. In 1896-1903 he was on the editorial staff of the *Encyclopædia Biblica*; in 1902 he became editor for the Palestine Exploration Fund; and he was the editorial adviser and a contributor on Old Testament and Semitic subjects to the *Encyclopædia Britannica*. He contributed to the *Jewish Quarterly*, the *Expositor*, etc., and wrote: *Glossary of Aramaic Inscriptions* (1898); *The Laws of Moses and the Code of Hammurabi* (1903); *Critical Notes on Old Testament History: Traditions of Saul and David* (1907); *Religion of Ancient Palestine* (1908); *I. Esdras* (1912).

COOK, THEODORE ANDREA (1867-). An English journalist and sportsman, born in Exmouth, Devon. He was educated at Radley and at Wadham College, Oxford, making a remarkable record as a scholar and oarsman. He became assistant editor of the *St. James's Gazette* in 1898, and was its editor for the first four months of 1900. He then went on the staff of the *Daily Telegraph*, and in 1910 became editor in chief of the *Field*. Cook was one of the first Englishmen to take up *épée de combat* fencing and was captain of the English fencing team in the first international match at Paris in 1903 and at the Olympic Games of 1906. Among his many books are the following: *Old Touraine* (1892); *Tobogganing at St. Moritz* (1896); *The Story of Rouen* (1899); *A History of the English Turf* (1903); *Old Provence* (1905); *Eclipse and O'Kelly* (1907); *The Olympic Games* (1908); and *Thomas Doggett, Deceased* (1908).

COOK, THOMAS (1808-92). An English railway excursion and tourist pioneer, born at Melbourne, Derbyshire. His energy was at first devoted to the cause of temperance, but later to the work with which his name is now inseparably connected. Beginning in 1841 with trips between Leicester and Loughborough, on the Midland Railway, the business rapidly increased in spite of many difficulties. The tourist tickets of Thomas Cook & Son have now become known all over the world. See **COOK'S EXCURSIONS**.

COOK, WALTER (1846-1916). An American architect, born in New York City. He was educated at Harvard University and received his

professional training at the Royal Polytechnic School, Munich, and the Ecole des Beaux-Arts, Paris. In 1877 he returned to New York, becoming in succession a member of the firms of Babb, Cook and Willard, Babb, Cook, and Welch, and Cook and Welch. He was a member of the jury for the New York Public Library and for the University of California, became consulting architect for New York's Board of Estimate and Apportionment, and was a member of that city's Art Commission in 1905-07. At various times he was president of the New York Chapter of the American Institute of Architects, of the Institute itself, and of the Society of Beaux-Arts Architects; and he was elected a member of the National Academy of Design and made a chevalier of the Legion of Honor. The following buildings, among many, were designed wholly or in part by him: the DeVinne Press building, office buildings for the New York Life Insurance Company, a residence for Andrew Carnegie, the Choir School at the cathedral of St. John the Divine, the stadium and other buildings at the Pan American Exposition, Buffalo, and a number of branch buildings for the New York Public Library.

COOKE, GEORGE ALBERT (1865-). An English clergyman, educated at Merchant Taylors' School and at Wadham College, Oxford, where he was scholar. He was lecturer in Hebrew at St. John's, chaplain of Magdalen, and, after 10 years as curate and rector, private chaplain to the Duke of Buccleuch from 1899 to 1908. He was made canon of St. Mary's, Edinburgh, in 1907 and canon of Rochester in 1908, and was chosen in 1908 Oriel professor of the interpretation of Holy Scripture at Oxford. He contributed to theological periodicals and to Hastings' *Dictionary of the Bible*, the *Encyclopædia Biblica*, etc., and published: *History and Song of Deborah* (1892), *Text-Book of North Semitic Inscription* (1903), *The Progress of Revelation* (1911), *Judges and Ruth* (1912).

COOKE, GEORGE FREDERICK (1756-1811). An English tragedian, born at Westminster. He made his debut on the stage in 1776 and soon became popular in England and Ireland. In 1810 he appeared in New York and other American cities, where his success was equally great. Although possessed of fine talents, Cooke ruined his career by intemperance, which also caused his death. His best work was in the characters of Shylock, Iago, and Richard III. Edmund Kean, who admired him as the greatest of actors, erected a monument to his memory in St. Paul's Churchyard, New York City. Consult Dunlap, *Memoirs of Cooke* (London, 1813).

COOKE, GEORGE WILLIS (1848-). An American clergyman, editor, and author, born at Comstock, Mich. He studied at Olivet College (Mich.) and at the Meadville Theological School (Pa.) and was in 1872 ordained to the Unitarian ministry. Thereafter he held pastorates in Wisconsin, Michigan, and Indiana, and in Dedham and Lexington, Mass., and Dublin, N. H. After 1899 he devoted his time principally to lecturing (at the Concord School of Philosophy, the Boston School of Social Science, and the Rand School of Social Science in New York) and to writing. Besides contributing much to the periodical press, including editorials for *The Christian Socialist* (he became a Socialist in 1902), he is the author of: *Ralph Waldo Emerson* (1881); *George Eliot* (1883); *Poets*

and Problems: Tennyson, Ruskin, and Browning (1886); *The Guide Book to Robert Browning* (1891); *Unitarianism in America* (1902); *The Poets of Transcendentalism* (1902); bibliographies of James Russell Lowell (1906) and Ralph Waldo Emerson (1908); *Woman in the Progress of Civilization* (1912).

COOKE, GRACE MACGOWAN (1863–). An American writer of stories, born at Grand Rapids, Ohio. She was married to William Cooke in 1877. In 1897–98 she was president of the Tennessee Woman's Press Club. Her writings include: *Mistress Joy*, with Annie Booth McKinney (1901); *Return: A Story of the Sea Islands*, in collaboration with her sister, Alice MacGowan (1903); *Huldah* (1904); *A Gourd Fiddle* (1904); *The Grapple* (1905); *Their First Formal Call* (1906); *Son Riley Rabbit and Little Girl* (1907); *The Power and the Glory* (1910); *The Doings of the Dollwars* (1910); *The Joy Bringer: A Tale of the Painted Desert* (1913); *The Girls of Silver Spur Ranch*, with Anne MacQueen (1913); *William and Bill*, with Caroline Wood Morrison (1914).

COOKE, HENRY (1788–1868). An Irish Presbyterian leader. He was born at Grilagh, near Maghera, County Derry, May 11, 1788; studied at Glasgow and Dublin, entered the ministry in 1808, and from 1829 was pastor in Belfast, and from 1853 professor of sacred rhetoric in Assembly College there. He played a prominent part in his denomination's affairs and was especially active and successful in excluding Arians from the Irish Presbyterian church and in promoting educational movements. He was an orator of a high grade, but he left no publications other than speeches and sermons. For a half-century his life was a large portion of the religious and public history of Ireland. A statue of him was erected in Belfast in 1875. For his *Life*, consult J. L. Porter (3d ed., Belfast, 1875).

COOKE, JAY (1821–1905). An American banker and financier, born in Sandusky, Ohio. He was privately educated and in 1838 entered the banking house of E. W. Clarke & Co., in Philadelphia, where he developed such rare ability in banking and financial matters that he was made a junior member of the firm in 1842. In 1858 he retired from the firm, and until 1861 was engaged in financing railroad companies and negotiating their bond issues. In the latter year he established the banking house of Jay Cooke & Co., in Philadelphia. During the Civil War, as the principal financial agent of the Federal government, he performed services of great value to the nation. He negotiated the first five-twenty loan of \$513,000,000, the ten-forty loan of \$200,000,000, the seventy loan of \$830,000,000, and others, making a total of over \$2,000,000,000. He was an ardent advocate of the national banking system and was influential in securing its success at the start. The failure of his banking house in 1873, through having advanced too largely on Northern Pacific Railroad bonds, was one of the causes of the financial crisis in that year; but the principal and interest was eventually paid on all claims, and the firm continued successfully. Consult E. P. Oberholtzer, *Jay Cooke, Financier of the Civil War* (Philadelphia, 1907).

COOKE, JOHN ESTEN (1830–86). An American novelist. He was born at Winchester, Va., the son of a distinguished lawyer, John Rogers Cooke, and brother of Philip Pendleton Cooke

(q.v.). He studied law, but showed early a literary bent. His best work, *The Virginia Comedians* (1854), a Colonial romance uneven in merit, was yet full of a promise not destined to be realized. He entered the Confederate service on Stonewall Jackson's staff, and on the death of the latter was transferred to the staff of Gen. J. E. B. Stuart. Later he was inspector general of the horse artillery of the Army of Northern Virginia. From the close of the war until his death his pen was rarely idle. Novels dealing with military events in Virginia and biographies of the great generals under whom he had served were produced with a speed fatal to high excellence, which did not, however, prevent his work from having historical value. The most popular of his military novels is *Surry of Eagle's Nest* (1866), which is understood to be partly autobiographical. Among his many books may be named the following: *Leather Stocking and Silk* (1854); *The Youth of Jefferson* (1854); *Henry Saint John, Gentleman* (1859), a sequel to *Virginia Comedians: Wearing of the Gray* (1867) and its sequel, *Mohun, or, the Last Days of Lee and his Paladins* (1868); *Life of Stonewall Jackson* (1863, 1876); *Life of R. E. Lee* (1871); and *Virginia: A History of the People* (1883), an excellent book contributed to the "American Commonwealths Series."

COOKE, JOSEPH BROWN (1868–). An American surgeon, born at Saratoga Springs, N. Y. After graduating from the College of Physicians and Surgeons, New York, he became a practicing physician and surgeon in New York City in 1890. He was visiting physician to the Northwestern Dispensary in 1892–94 and to St. Mary's Free Hospital for Children in 1892–96. In 1900 he became surgeon to the New York Maternity Hospital and in 1903 obstetrician to the New York Polyclinic Medical School and Hospital and adjunct professor of obstetrics. His publications include: *Manual of Obstetrical Technique* (1900; 6th ed., 1908); *A Nurse's Handbook of Obstetrics* (1903; 6th ed., 1913); *Textbook of Obstetrics* (1905); and a novel, *The Mystery of Carney-Croft* (1906).

COOKE, JOSIAH PARSONS (1827–94). An American chemist, born in Boston. He graduated at Harvard in 1844 and soon afterward was appointed to the chair of chemistry and mineralogy at Harvard College. In this capacity he stimulated the scientific study of chemistry at collegiate institutions, urging laboratory instruction, which before his time had not been introduced into the undergraduate course of American colleges. It was Cooke who introduced his pupil Theodore William Richards, at the time a graduate student of chemistry at Harvard, into the study of atomic weights—a subject to which Richards (q.v.) subsequently made a number of contributions. The joint communication, by Cooke and Richards, on the relative values of the atomic weights of hydrogen and oxygen, was published in the *Proceedings of the American Academy of Arts and Sciences* for 1887 and shortly afterward reprinted in the *American Chemical Journal* and in the *London Chemical News*. Cooke's other publications include: *Chemical Problems and Reactions* (1853); *Elements of Chemical Physics* (1860; 4th ed., 1886); *First Principles of Chemical Philosophy* (1868; rev. ed., 1882); *The New Chemistry* (1872; rev. ed., 1884);

Michigan: A History of Governments (1885; rev. ed., 1905); *The Credentials of Science the Warrant of Faith* (1888).

COOKE, MORDECAI CUBITT (1825-1912). An English botanist, born at Horning, in Norfolk. When a boy he was apprenticed in the draper's trade, afterward acted as clerk in a law office, and subsequently taught school. At the age of 35 he obtained a position in the India Museum, from which he was transferred to the Kew Botanical Gardens in 1880. In 1903 he was awarded the Victoria medal of honor by the Royal Horticultural Society, and the Linnæan gold medal by the Linnæan Society. He wrote more than 40 botanical works, dealing chiefly with fungi, and including: *Manual of Botanic Terms* (1862); *Handbook of British Fungi* (1874); *Mycographia* (6 vols., 1879); *Illustrations of British Fungi* (8 vols., 1881); *An Introduction to the Study of Fungi* (1895); *Mushrooms Edible and Poisonous* (1903); *Fungoid Pests of the Flower Gardens* (1906); *A Manual of Structural Botany* (new ed., 1907).

COOKE, PHILIP PENDLETON (1816-50). An American poet, elder brother of John Esten Cooke and first cousin of John Pendleton Kennedy, the novelist. He was born at Martinsburg, Va. He graduated at Princeton in 1834 and, like his more famous younger brother, studied law under his father, but preferred literary pursuits, and contributed many poems and stories to the *Southern Literary Messenger* and other magazines. He was equally devoted to field sports, which in part accounts for the fresh quality of his work, especially of his *Froissart Ballads* (1847), his only published book.

COOKE, PHILIP ST. GEORGE (1809-95). An American soldier, born near Leesburg, Va. He graduated at West Point and was assigned as second lieutenant of the Sixth Infantry in 1827, served for many years on the frontier, participated in the Black Hawk War of 1832, and became lieutenant of dragoons in 1833. During the Mexican War he served from October, 1846, to July, 1849, in California as lieutenant colonel of a battalion of Missouri volunteers and for a short time commanded a regiment in the city of Mexico. In 1847 he became major of the Second Dragoons. After 1849 he was reassigned to frontier duty, took part in several operations against the Indians, commanded the cavalry in the Utah expedition of 1857-58, became colonel of the Second Dragoons in 1858, and from August, 1860, to August, 1861, was in command of the Department of Utah. He was raised to the rank of brigadier general in November, 1861, and participated as a commander of a cavalry division in the Peninsular Campaign, commanded the Baton Rouge District of the Department of the Gulf from October, 1863, to May, 1864, and from May, 1864, to March, 1866, was general superintendent of the recruiting service. At the close of the war he was brevetted major general. He commanded the Department of the Platte in 1866-67, the Department of the Cumberland in 1869-70, and the Department of the Lakes from 1870 until his retirement in 1873. He published: *Scenes and Adventures in the Army, or Romance of Military Life* (1856); *The Conquest of New Mexico and California: An Historical and Personal Narrative* (1878); *New Cavalry Tactics* (1884).

COOKE, RICHARD JOSEPH (1853-). An American Methodist Episcopal bishop, born in

New York. He entered the ministry in 1873 and was ordained in 1876; graduated at East Tennessee Wesleyan University in 1880 and studied in Berlin for a year; and was connected after 1889 with Grant University (Chattanooga, Tenn.), of which he became professor of New Testament exegesis in that year and vice chancellor in 1893. His greatest influence in the Methodist church was as editor of the *Methodist Advocate Journal* (1891) and as book editor of the church from 1904 to 1912, when he was chosen bishop. Among Dr. Cooke's works are: *Doctrine of the Resurrection* (1884); *Reasons for Church Creed* (1888); *Christianity and Childhood* (1891); *The Historic Episcopate* (1896); *Christ and the Critics* (1898); *The Incarnation and Recent Criticism* (1907); *The Wingless Hour* (1911); and *Freedom of Thought in Religious Teaching* (1913).

COOKE, ROSE TERRY (1827-92). An American poet and writer of short stories, chiefly of New England rural life, whose prominent characteristics are pathos and humor. She was born at West Hartford, Conn. After her marriage to R. H. Cooke in 1873 she lived at Winsted, Conn., till 1887, removing thence to Pittsfield, Mass., where she died in 1892. Her first published work was *Poems* (1860). A second and complete collection of her verses was made under the same title in 1888. She then turned to fiction, often defective in form, but spontaneous, fresh in its humor, and keen in its perception of New England traits and character. Her volumes, except for a single novel, *Steadfast* (1889), are collections of short stories: *Happy Dodd* (1879); *Somebody's Neighbors* (1881); *Root-Bound* (1885); *The Sphinx's Children* (1886); *Huckleberries* (1891).

COOKE, THOMAS (1703-56). An English writer, known as Hesiod Cooke. In 1725 he published a poem called *The Battle of the Poets*, in which he attacked Pope and the other wits and was rewarded by a place in the *Dunciad* (ii, 138). He did a large amount of miscellaneous literary work and was for a time editor of the *Craftsman*. He has a deserved place in literature as the translator of Hesiod (1728) and of Terence (1734).

COOKE, SIR WILLIAM FOTHERGILL (1806-79). An English electrical engineer, born at Ealing, in Middlesex. He received his education at Durham and Edinburgh, served on the Indian staff from 1826 to 1831, and then studied medicine and the physical sciences in France and in Germany. In 1837 he entered into partnership with Wheatstone, and together with him rendered services of the highest importance to electrical engineering, especially to telegraphy. In 1838 he built the first English telegraph line, between London and West Drayton. He published *The Electric Telegraph: Was It Invented by Professor Wheatstone?* (1854).

COOKERY. The art of preparing food for the table. In general, the preliminary processes of cleaning foods, paring vegetables, etc., are included under the term "cookery" as is also the preparation of foods by chilling or freezing. Some foods, e.g., fruits, are eaten both raw and cooked, both being wholesome. In the majority of cases, however, the effect of proper cooking is to render food more wholesome and palatable than in the raw state. The heat of cooking also sterilizes food if microorganisms, insects, or their eggs be present accidentally.

History. Cooking, in one form or another,

has been practiced since immemorial times, and the knowledge we possess of the ancient modes of cooking presents some interest in connection with the study of the customs and habits of the past. The Egyptians possessed wheaten flour of the finest sort. Their common bread was made of spelt, or of the centre of the lotus dried and pounded. Leeks and onions seem to have been common vegetables. Fish they salted and dried in the sun; quails, ducks, and small birds they salted and ate raw. We read of their roasting and boiling the flesh of the ox.

Fish was a common article of food with all classes of Greeks; but with the wealthier much skill and delicacy was used in cooking it, and choice and expensive varieties were sought after. Archestratus writes of "a boiled torpedo done in oil and wine, and fragrant herbs, and some thin grated cheese" (*au gratin*). Fish, stuffed with forcemeat and fried, boiled in pickle, baked in fig leaves soaked in oil, cooked in hot ashes, etc., are among the recipes that we find recorded. The Greeks boiled and roasted the flesh of sheep, pigs, lambs, and goats. They had poultry, small birds, and game, and sausage made of blood, partaking of the character of blood puddings (*Blutwurst*). The bread of Athens was the most celebrated in Greece; it was sometimes homemade, but chiefly bought in the market, and prepared in great variety, as pan loaves, rolls, sweet loaves, etc. The bread eaten by the poorer classes was made of barley and was sometimes flavored with oil, honey, poppy seed, etc. Athenian cheese cakes were also famous; and there were honey and sesame cakes, which, with fresh and dried fruits, as figs, almonds, olives, and nuts, seem to have been partaken of after dinner. They consumed vegetable food also in abundance and had cabbage, onions, lettuce, and so on.

In the Greek house there was no regular cook, though in the establishments of the wealthy several women were kept to attend to the kitchen. The women in general saw to the requirements of the table, and even the mistress of the house was not idle. Cooks stood in the market in Athens, ready to be hired for particular occasions. The most celebrated were those of Sicily; they were probably persons of some importance.

In the early days of Rome a gruel made of lentils, and called *puls*, was the common food of the people, and with green and other vegetables was, till later times, the usual fare of the inferior classes—meat being used but sparingly. By degrees, however, a taste for better eating crept in, and after the Asiatic conquests luxury was imported. The wealthy Romans were fond of elegant service at their tables and studied carefully the quality of the viands that were placed before them. They seem to have been as clever as the French in preparing surprises and in carrying out disguises in their dishes. The Romans prepared and cooked their food with oil to a great extent. Their meals probably consisted of two courses and a dessert, the first course being intended to excite an appetite; the second was a joint, roasted or baked. The Greeks and Romans used honey for the purposes for which we use sugar. Cane sugar probably was cultivated in China, and its manufacture understood there; but the Greeks took it for a kind of solid honey and used it only for medicinal purposes.

Of ancient British cooking not much is known; it was probably of an extremely rude description. Hares, poultry, and fish are said to have been forbidden as food. The Saxon chronicles

make some reference to cooking. The Danes and Germans appear to have paid little attention to the preparation of their catables. The Normans were more curious in these matters; some offices among them were held in right of the kitchen. In early English cooking much use was made of the mortar. Oil and lard were used instead of butter. Many English cookbooks bear an early date, as *The Forme of Cury*, by Pegge (1780), and others date as follows: Sir J. Elliott's book (1539); Abraham Veale's (1575); and *The Widdowes's Treasure* (1625).

From the writings of early explorers a good deal is known of the cookery of the American Indians. They roasted food, baked it in earth ovens, and boiled it, as did most primitive peoples. We owe to them one of our common foods, Indian corn or maize, and some of our corn dishes, e.g., succotash (corn and beans cooked together), are of Indian origin.

The cooking of France was probably of an imperfect and rude kind until the introduction of Italian tastes by the princesses of the house of the Medici. The great difference between French and English or American cooking consists in the fact that the French cook their meat much longer, knowing that this renders it more tender. They are thereby enabled to multiply dishes by altering or annihilating the original taste of the meat and making it a vehicle for foreign flavors. The variety, daintiness, and grace of form which dishes thus acquire are very admirable. In the point of economy, the French are commonly said to surpass the Anglo-Saxon. Great attention is given by the French to the economical use of materials, to seasoning, and to careful cookery. Bread and pastry are less often made at home in France than in the United States. Jewish cookery is termed "Kosher," i.e., "ceremonially clean," in accordance with the requirements of the Mosaic law. The word is used of foods which meet these requirements, especially of meats from animals slaughtered in accordance with Jewish ecclesiastical law, as well as of methods of preparing food.

The art of cooking as a branch of woman's education has latterly engaged considerable attention in America, England, and other countries; and there are in New York, Boston, Philadelphia, Canada, and other places schools where young women can receive this kind of instruction. The preparation of food is an essential part of any course in home economics, a subject commonly found in the curricula of colleges and other schools for women—the colleges and similar institutions specializing commonly on theories of nutrition, of cookery, etc., and the grade schools giving instruction quite largely in the art.

The principal cooking methods are boiling, steaming, roasting, broiling, frying, and baking. These terms and similar ones are not absolute, but are used somewhat loosely.

Boiling consists in cooking food in water at the boiling temperature, 212° F. or 100° C., with heat enough to insure vigorous ebullition. The water may be seasoned with salt, sugar, seasoning herbs, etc., according to the food used and the object sought.

Steeping, infusing, and percolating are special processes akin to boiling, usually employed in the making of such beverages as tea and coffee.

Another special form of cooking in hot water is *coddling*, in which eggs, e.g., are placed in boil-

ing hot water which is allowed to cool gradually without further application of heat.

Steaming consists in cooking food over boiling water or in live steam in some special device.

Roasting, a process more used formerly than at the present time, is employed chiefly with meats, fish, and fowl. The food is cooked in the open air in front of a fire, being suspended or placed on a spit or some similar device so that it can be rotated. Frequent basting is desirable. A similar method is *planking*, in which the meat or fish is fastened to a suitable board or plank and placed in front of a fire until cooked. Bread, particularly Indian corn bread, may be cooked in the same way. The term is now applied to cooking meat and vegetables in ovens, more properly known as "baking."

Broiling, or *grilling*, is a process similar in principle, in which the food—most commonly meat, fish, or fowl—is cooked on a gridiron, broiler, or other device over or under the fire. When bread or similar food is thus treated, it is termed *toasting*.

Baking is a general term applied to cooking in hot, relatively dry air in an inclosed space, as an oven, the process being used with meats and fish as well as with breadstuffs, vegetables, and other foods. Utensils of various sorts are used to contain the foods during baking. Meat baked in open, shallow pans resembles roasted meat in appearance, and in fact is generally termed "roast meat," since true roasting has become an uncommon practice in households.

Frying is of two sorts, viz., *deep frying*, in which the food is immersed in hot or boiling oil or fat, and *sautéing* (*pan frying*, *dry frying*, or *pan broiling*), in which the food is cooked in an open shallow utensil in its own fat or in a small amount of added fat, sometimes only enough to "grease the pan." Frying is a method used with meat, vegetables, batters, and other food materials.

There are also special forms of these cooking processes which are very largely determined by the kind of utensil used. For instance, *casserole* cookery, in which the foods are cooked in a covered vessel, usually earthenware. This is akin to *baking* or to *sautéing* if the food is cooked in a little fat with or without seasoning, or akin to *stewing* if water or other liquid is added. Casserole cooking is essentially the same as the process sometimes termed *braising*, in which the food, e.g., meat, is browned and then cooked in a moist heat in a closely covered utensil. The term *braising* is also applied to browning the surface of food, e.g., an omelet, by holding a red-hot iron over it.

A *double boiler*, or *bain marie*, is a common cooking device in which food is placed in a container which in turn is partly immersed in boiling water or in steam.

In so-called *fireless cookers* hot foods are placed in insulated air spaces and cooked by the retained heat alone or by this with the addition of heat supplied by hot stones or iron plates or in some similar way. The principle is similar to that employed in keeping liquids, etc., hot in vacuum jacketed bottles or similar containers. See FIRELESS COOKING.

The *chafing dish* is a common special cooking utensil. It is usually made of silver, copper, or other metal, and foods may be cooked in a pan directly over the flame, usually an alcohol lamp or in a pan over a hot-water pan

which is next to the flame. Electric chafing dishes are also common, as are many other special cooking appliances and utensils in which electricity is used as a source of heat instead of the usual fuels—wood, coal, gas, petroleum, etc.

Judging by the results of many careful laboratory experiments, the chief loss of weight in cooking meat is due to the driving off of water. When beef is pan-broiled, there appears to be no great loss of nutritive material, particularly if the material adhering to the pan is utilized for making gravy. When beef is cooked in water, 3 to 20 per cent of the total substance is extracted and found in the broth. This is not an actual loss if the broth is used for soup or in other ways. Beef used for the preparation of beef tea or broth, on an average, loses relatively little nutritive material, though much of the flavoring material is removed. The amount of fat in the broth varies directly with the amount originally present in the meat, the fatter the meat the greater the quantity removed. In cooking in water, the smaller the piece the greater the amount of material removed, and the longer the time the more material removed. Cookbooks generally state that when meat is boiled for the table it should be plunged at once into boiling water, so that the outer layer may be coagulated, and recommend that it should be placed in cold water and slowly raised to the boiling point when used for soup making. Experiments show that the amount of material removed is practically the same whichever method is followed. In general, soups and broths do not contain much of the nutritive material of the meat, though they do contain much of the flavoring material originally present.

Authorities quite generally agree that when meat is baked it should be submitted at once to a degree of heat which will sear the outside of the roast so that the juices may be retained in it, and that the subsequent cooking should be rapid rather than slow, and at a high rather than a moderate oven temperature. To insure a rare (underdone) or medium well-cooked roast, the cooking should continue 13 to 15 minutes per pound, and 13 to 15 minutes "to the oven"; and 20 minutes per pound and 20 minutes "to the oven" for a well-done roast.

Experiments have shown that meats of various kinds and cuts cooked by the ordinary methods are all very thoroughly assimilated, no marked difference being found which could be ascribed to the kind or cut, or to the method of cooking. There is a common belief, apparently borne out by experience, that for invalid cookery the meats should be cooked in such a way that they are very tender, and similarly that soft-cooked eggs are preferable to hard-cooked eggs. Breads and other foods made from flour and meals should be cooked sufficiently to remove the raw or "doughy" taste, i.e., until the starch is well gelatinized. It is a general belief, well borne out by experience, that cereal breakfast foods and similar articles are best when cooked slowly for a long time. Fried foods should not be cooked at a temperature so high that the fat undergoes decomposition, since acrolein, one of the products formed from overheated fat, is very irritating to the mucous surfaces. Very probably the presence of this substance in fried foods improperly cooked is responsible for the statement often

made that fried foods are the cause of digestion disturbances.

Vegetables are commonly fried, boiled, or baked. Potatoes should be cooked until they are tender and mealy. If boiled, the water is commonly poured off, and the potatoes allowed to stand where they will keep hot in order that they may "steam" or "dry out." Green vegetables are most commonly cooked in boiling salt water, and the process should be continued until until they are tender, as overcooking injures the flavor and color. Special directions for cooking fruits and nuts, for making breads, cake, pastries, bonbons, etc., as well as for preparing the foods enumerated above, can be found in the numerous books and journals devoted to cookery.

Every precaution should be taken to insure cleanliness in the cooking of food. This is important, not only because one wishes to avoid filth, but also because unclean methods make possible the transmission of disease.

In the United States and in other countries there is a growing effort to secure cleanliness in markets, food factories, bakeries, hotels, restaurants, and other places where food is handled, prepared, sold, and eaten. With this end in view legislation has been enacted in many places, providing for inspection and for punishment if the law is violated.

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COOK INLET. A bay of the Pacific Ocean, indenting the south coast of Alaska, between the Alaskan and Kenai peninsulas (Map: Alaska, J 5). It is included between lat. 59° and 61° 20' N. and long. 149° and 154° W. In shape long, relatively narrow, and crooked, its length is about 200 miles and its greatest breadth 60 miles. Sudden storms, fogs, and tidal rips, due to high tides along the broken coast line, make navigation at the northern extremity somewhat dangerous, though steamers ply its waters without serious difficulty during the season. From November to May the northern part is locked in ice. It contains several islands, Augustine Island, with its volcano Mount St. Augustine, in violent eruption during 1883, being the largest. The coast scenery is grand, comprising active volcanoes (of which Mount Iliamna, 12,066 feet altitude, is the highest), snow-clad mountains, glaciers, and green hills. At its northern extremity are the Knik Arm and the Turnagain Arm, branching to the north-east and east. It was explored in 1778 by

the navigator whose name it bears, in the hope of finding a passage to the Arctic Sea. It receives the waters from a number of rivers, chief of which is the Sushitna River, coming from the north. Coal is found on its shores, along which are a number of small towns. Seldovia is the steamship port of call.

COOK ISLANDS, or HERVEY GROUP.

An archipelago of small islands in Polynesia, Pacific Ocean, consisting of six large and a number of small islands and reefs, extending from about lat. 19° to 22° S. and from long. 157° to 163° W. southeast of Samoa and northwest of the Austral Islands (Map: World, West. Hem., M 4). The total area is 150 square miles. Rarotonga, with an area of 26 square miles, is the largest island. The soil is generally fertile, but water is scarce. The chief products are copra, coffee, and oranges, and the trade is mostly with New Zealand, with which the group has monthly steam communication. Pop., 1906, 6708; 1911, 6964; chiefly consisting of Polynesian of the second, or Tongafiti, swarm of migration, and all converted to Christianity of evangelical type. The group was discovered by Cook in 1773-77; made a British protectorate in 1888, and annexed in June, 1901, to the Dominion of New Zealand. The islanders have a legislature of heads of families and an executive council of the higher chiefs; the acts of the legislature require the approval of the British Resident, whose residence is on Rarotonga.

COOK'S EXCURSIONS. A system of travel originated by Thomas Cook in 1841, by which companies of tourists are conducted by a manager or guide, who makes all the traveling arrangements and directs the disposition of the time.

COOK'S TALE, THE. One of the stories forming Chaucer's *Canterbury Tales*.

COOK STRAIT. A passage which separates North Island and South Island, New Zealand (Map: New Zealand, S. I, E 2). Its greatest width is 90 miles. It was discovered by Captain Cook on his first voyage in 1769.

COOKTOWN. A town and port of Banks Co., Queensland, at the mouth of the historic Endeavor River in 15° 27' 20" S. lat., 145° 17' E. long., 1050 miles northwest of Brisbane, with which and with other ports it is connected by steamship service (Map: Australasia, D 4). It is connected by rail with Laura in the gold fields, 67 miles westward. It was here that Captain Cook beached the *Endeavor* in 1770 after he had got her off a reef outside, having thrown his guns overboard to keep the ship afloat. Search has failed to recover the guns, which have evidently been covered up by the strong coral growths of the vicinity. A monument to Captain Cook was unveiled in 1889. There are fine public buildings, an admirable hospital, churches, schools, etc. It is the main port for trade with New Guinea, and the port is the outlet for a sugar country and a rich mineral country. It has pearl fisheries, coffee and rice grow near by, tin and gold are mined. Pop., 1901, 1936; 1911 (election district), 3349.

COOLEY, LeROY CLARK (1833-1916). An American chemist. He was born at Point Peninsula, in Jefferson Co., New York; graduated at Union College in 1858; and from 1860 to 1874 was professor of natural sciences in the New York State Normal School. In 1874 he became professor of physics and chemistry in Vassar

College. His chair was made that of physics only in 1894, and he became professor emeritus in 1907. His works include: *The New Text-Book of Physics* (1880); *The New Text-Book of Chemistry* (1881); *Laboratory Studies in Chemistry* (1894); *The Student's Manual of Physics* (1897).

COOLEY, MORTIMER ELWYN (1855-). An American engineer, born at Canandaigua, N. Y. He graduated from the United States Naval Academy in 1878; in 1881 became professor of mechanical engineering and in 1904 dean of the department of engineering at the University of Michigan; was chief engineer in the United States navy during the Spanish-American War, and chief engineer officer of the Michigan Naval Brigade from 1895 to 1911. After 1900 he was known as an expert investigator and appraiser of public utilities through his work in appraising the railroads and public-service corporations of Michigan in 1900-01, 1903-05 and 1910-11, and through his municipal investigations in New York, Chicago, Boston, and other cities. In 1907 he became chairman of the Block Signal and Train Control Board of the Interstate Commerce Commission.

COOLEY, THOMAS MCINTYRE (1824-98). An American jurist and writer on constitutional law. He was born in Attica, N. Y., but removed to Michigan in 1843 and in 1846 was admitted to the bar. He compiled the general statutes of the State, was reporter for the Supreme Court (1858-64), and published eight volumes of reports and a digest of the Michigan decisions. He was professor in the law department of the University of Michigan and dean of the faculty in 1859. In 1861 he became professor of constitutional and administrative law in the school of political science in the university, and also dean, and later occupied the chair of American history in the academic department. From 1864 to 1885 he was a justice of the State Supreme Court, and was Chief Justice from 1868 to 1869. In 1887 he became chairman of the Interstate Commerce Commission, but resigned four years later. Judge Cooley's publications on constitutional law, which are authoritative, are: *The Constitutional Limitations which Rest upon the Legislative Power of the States of the American Union* (1868); *Story's Commentaries on the Constitution of the United States, with Additional Commentaries on the New Amendments* (1873); *Law of Taxation* (1876); *The Law of Torts* (1879); *General Principles of Constitutional Law in the United States* (1880; 3d ed., 1898).

COOLGAR/DIE. A mining town in Western Australia, 310 miles east-northeast of Perth, with which it is connected by rail and telegraph (Map: Western Australia, E 10). Gold, discovered here in 1891, has given rich yields since 1893. Lignite and copper are also mined. Pop., 1901, 4249; 1907, 2829.

COOLIDGE, ARCHIBALD CARY (1866-). An American professor of history, born in Boston and educated at Harvard University, the University of Berlin, the Ecole des Sciences Politiques (Paris), and the University of Freiburg. He was acting secretary to the American legation at St. Petersburg in 1890-91 and secretary to the American legation at Vienna in 1893. In 1893-99 he was instructor in history at Harvard, from 1899 to 1908 assistant professor, and thereafter professor; in 1911 he also became director of the University Library.

He was a member of the Taft party to the Philippine Islands in 1905-06, Harvard lecturer at various French universities in 1906-07, and delegate to the Pan-American Scientific Congress at Santiago, Chile, in 1908-09. In 1913-14 he was American exchange professor at the University of Berlin. He is author of *The United States as a World Power* (1908; French and German translations).

COOLIDGE, CHARLES ALLESTON (1858-). An American architect, born in Boston. He was educated at Harvard University and the Massachusetts Institute of Technology, and was in the office of H. H. Richardson, architect, in Boston from 1882 until he became a member of the firm of Shepley, Rutan & Coolidge in 1886. From 1892 to 1900 he had charge of the Chicago office of the firm. Among the notable buildings planned by him are the Ames Building, South Terminal Station, and the new Harvard Medical School buildings at Boston, the Chicago Public Library, Chicago Art Institute, and the Law School and Commons of Chicago University.

COOLIDGE, MARY (ELIZABETH BURROUGHS) ROBERTS (1860-). An American economist, born at Kingsbury, Ind., and educated at Cornell and Leland Stanford Junior universities. She was on the staff of the *Rural New Yorker* (1880-81); taught history in the Washington (D. C.) High School (1882-84); was instructor in history and economics at Wellesley College (1886-90); and between 1896 and 1903 was assistant and associate professor of sociology at Stanford University. For four years she served as research assistant in the Carnegie Institution, and in 1909 she engaged in research for the San Francisco Relief Survey. She was married to Dane Coolidge in 1906. She revised Warner's *American Charities* (1908); and wrote *Chinese Immigration* (1909); *Why Women Are So* (1912).

COOLIDGE, SUSAN. The pen name of Miss Sarah Chauncey Woolsey (q.v.).

COOLIDGE, THOMAS JEFFERSON (1831-). An American manufacturer and diplomat. He was born in Boston, Mass., and was educated at Harvard and in Europe. In 1892 he was sent as United States Minister to France, but was superseded by James B. Eustis in 1893. He was appointed member of the Joint High Commission to adjust disputes between the United States and Canada in 1899. He was interested in various banking, manufacturing, and transportation enterprises, as president, manager, or treasurer. Consult his autobiography (Boston, 1902).

COOLIDGE, WILLIAM AUGUSTUS BREVOORT (1850-). An American writer on Switzerland. He was born near New York City and was educated at St. Paul's, Concord, N. H., Elizabeth College, Guernsey, and Exeter College, Oxford. In 1875 he became life fellow of Magdalen College, Oxford, but did not give up his citizenship in the United States. He was professor of English history at St. David's College, Lampeter, in 1880-81, and modern history tutor at Magdalen in 1881-85. His experiences as a member of the English Alpine Club, together with his knowledge of French, modern history, and jurisprudence, made him the foremost writer in English on Swiss topography, history, government, and biography. In 1908 he received the honorary degree of Ph.D. from the University of Bern. He wrote and revised several

guidebooks to Switzerland and the Alps, edited the *Alpine Journal* (1880-89), contributed articles on Switzerland to reviews and works of reference, and published *The Mountains of Coigne* (1893), *The Alps in Nature and History* (1908), and *Alpine Studies* (1912).

COOLIE (Beng. *kālī*, Hind. *qālī*, laborer, from Tamil *kālī*, daily hire). A name applied to an unskilled laborer in India and eastern Asia and to contract emigrant laborers sent from India and China to other countries, especially the West Indies and South Africa. In tropical countries where white labor is impossible, there arose with the abolition of slavery a need for cheap labor capable of doing the heavy tasks of plantations, factories, and shipping. For this purpose the acclimated cheap labor of the overpopulated Asiatic countries seemed especially adapted. The coolie trade began about 1834. It was accompanied by abuses which made it little better than a form of slavery, and Great Britain, which had been largely interested in the trade, undertook to put a stop to it in 1855. This threw it largely into the hands of the Portuguese. The coolie trade from Macao to Cuba and Peru was little better than the slave trade so far as its conditions were concerned. The traffic was regulated by the convention of 1866 between China, France, and Great Britain. The requirement by China of a return passage at the end of five years stopped the trade with the West Indies. Under the Indian Emigration Act of 1883 emigration under contract is allowed only to certain colonies, where good treatment is assured. These are the British colonies of British Guiana, Jamaica, Mauritius, Trinidad, St. Lucia, St. Kitts, St. Vincent, Grenada, Natal, and Fiji, and the French Guadeloupe and Martinique, as well as Dutch Guiana and the Danish St. Croix.

In the Transvaal, after the conclusion of the South African War, the deficiency of native labor in the Rand mines led to the enactment of an ordinance in February, 1904, providing for the importation of Chinese laborers under a system of indenture. The terms under which the importation of laborers was to be carried on were set forth in a convention between the British and Chinese governments concluded May 1, 1904. The Boer element in the Transvaal was bitterly opposed to the ordinance as tending to introduce a new factor into the already serious racial problem of South Africa. The compound system of housing the Chinese miners was not free from violence, and the many serious crimes committed by runaway coolies created a feeling of alarm in the Transvaal and in England, where the Liberal party denounced the system as one equivalent in practice to slavery. The issue was largely responsible for the Liberal triumph in the General Election of 1906, and one of the first acts of the Campbell-Bannerman ministry was an order for the stoppage of coolie importation until the establishment of responsible government in the Transvaal should enable the colony to pronounce on the system. By 1906 over 50,000 laborers had been imported, and the result has been that the treatment of these alien Asiatics has become one of the most vital questions in South African politics. (See *UNION OF SOUTH AFRICA*.) Consult: Jenkins, *The Coolie: His Rights and Wrongs* (London, 1871); Hope, *In Quest of Coolies* (ib., 1872).

COOLIE LABOR. See *ORIENTAL IMMIGRATION*.

COOMAS'SIE. See *KUMASSI*.

COON OYSTER. An oyster growing wild near shore, where it can easily be obtained by a raccoon. The name originated in the southern United States, where these oysters are often called "strap oysters," because their clustered manner of growth makes them long, narrow, and thin.

COONS. A popular name (contracted from raccoon) for members of the Whig party in 1838-45, when the raccoon formed the emblem of the party.

COONTIE. See *ZAMIA*.

COOPER, Kŏp'ēr or kŭp'ēr, ANTHONY ASHLEY. See *SHAFTESBURY*.

COOPER, SIR ASTLEY PASTON (1768-1841). A celebrated English surgeon, born in Norfolk. In 1784 he began the study of surgery in London under Mr. Cline and in 1789 was appointed demonstrator of anatomy at St. Thomas's Hospital. In 1793 he was appointed professor of anatomy at Surgeons' Hall; and in 1800, surgeon to Guy's Hospital. In 1813 he received the professorship of comparative anatomy in the College of Surgeons. An essay on the effects resulting from the destruction of the *membrana tympani* gained him, in 1802, the Copley medal of the Royal Society, of which he was elected a fellow three years afterward. In 1804-07 appeared his great work on *Hernia*. His other works include: *The Principles and Practice of Surgery* (1836-37); *On Dislocations and Fractures* (1822); *Anatomy and Diseases of the Breast* (1829-40); *Anatomy of the Thyroid Gland* (1832). He was the first to attempt the tying of the carotid artery—an attempt which, though unsuccessful in his hands, has since proved effectual in the hands of other practitioners. In 1817 he tried what was considered the boldest experiment ever attempted in surgery—the tying of the aorta—which did not prove successful. Consult his *Life and Correspondence*, 2 vols. (London, 1843).

COOPER, COLIN CAMPBELL (1856-). An American landscape painter. He was born in Philadelphia and studied there at the Academy of Fine Arts and in Paris at the Julian and Delécluse academies. After a year as teacher in Drexel Institute, Philadelphia, he settled in New York. He was one of the first to give expression to the distinctive beauty of American cities, with their skyscrapers and manifold activities. A close observer, he reminds one, in his color and atmospheric effects, of the Impressionists. He also paints cathedrals and views of quaint German cities, such as Rothenberg, with feeling and charm. Among his best-known works are "Broad Street, New York" (Cincinnati Museum); "The Flatiron Building" (Dallas, Texas); "Quebec Cathedral" (Philadelphia Art Club); "Procession of Bruges" (1906, Lotos Club, New York); "View of Pittsburgh"; "Beauvais Cathedral" (1912); "The Avenue" (1913); "Cathedral of Siena" (1913).

COOPER, EDITH EMMA. See *FIELD, MICHAEL*.

COOPER, EMMA LAMPERT. An American painter, wife of Colin Campbell Cooper, born at Nunda, N. Y. She was educated at Wells College and studied art under Harry Thompson in Paris, Keever in Holland, and Chase in New York. Her principal subjects are street scenes, interiors, and landscapes. Her pic-

ture in water color, "The Bread Winner," was awarded a medal at the World's Columbian Exposition, Chicago, 1893. Other works include "Through the Meadows" (1900), "Morning near Riverdale" (Wells College), water-color views of Wells and Lincoln cathedrals; "Courtyard, Verona" (1911); "The Market Stairway, Siena" (1912).

COOPER, FREDERIC TABER (1864-). An American editor and writer, born in New York City and educated at Harvard and Columbia universities. He was assistant in Latin at Columbia (1891-94), associate professor of Latin and Sanskrit at New York University (1895-1902), literary editor of the *New York Commercial Advertiser* (1898-1904), and editor of *The Forum* (1907-09). His publications include: *History of the Nineteenth Century in Caricature*, with A. B. Maurice (1904); *The Craftsmanship of Writing* (1911); *Some American Story Tellers* (1911). He contributed to the first edition of the *NEW INTERNATIONAL ENCYCLOPEDIA*.

COOPER, GEORGE HENRY (1821-91). An American naval officer, born in Fort Diamond, New York harbor. He was appointed a midshipman in the United States navy in 1837 and in 1838-42 was attached to the *Constitution*, of the Pacific squadron. From 1847 to 1861 he was stationed successively on board the receiving ship at Norfolk, Va., at the naval station there, on board the *Susquehanna* of the East Indian squadron, again at Norfolk on board the *Roanoke* of the Home squadron, and at the Portsmouth Navy Yard. Promoted in 1862 to be commander, he was in charge of several vessels during the Civil War, notably of the monitor *Sangamon*, which for seven weeks in 1863 was constantly employed in shelling Fort Sumter and Sullivan's Island. In 1867-69 he commanded the Norfolk Navy Yard, in 1874-78 that at Pensacola, Fla., and in 1880-82 that at Brooklyn, N. Y. He was promoted rear admiral in 1881 and until his retirement in 1884 commanded the North Atlantic squadron, with the flagship *Tennessee*, and headquarters at New York.

COOPER, HENRY ERNEST (1857-). An American statesman, born at New Albany, Ind. He graduated at the Boston University Law School in 1878 and subsequently became established at Honolulu. Upon the outbreak of the Hawaiian revolution he was appointed chairman of the Committee of Safety and three days later (Jan. 17, 1893) publicly read the proclamation abolishing the monarchy. He was active in the organization of the provisional government and was subsequently appointed Minister of Foreign Affairs (1895-99), Minister of Public Instruction (1896-99), acting President of the Republic of Hawaii (Jan. 9 to March, 1898), and Attorney-General (1899-1900). He also served as Minister of the departments of the Interior and of Finance, and as first Secretary of Hawaiian Territory.

COOPER, JACOB (1830-1904). An American clergyman and author. He was born in Butler Co., Ohio, and was educated at Yale University, at Berlin, and at the Theological Seminary in Edinburgh. He was professor of Greek at Centre College, Ky., from 1856 to 1866; professor of Greek at Rutgers College from 1866 to 1883; and professor of ethics and metaphysics at the University of Michigan from 1883 to 1884. From 1893 until his death he was professor

of philosophy and logic at Rutgers College. His publications include: *The Eleusinian Mysteries* (1854); *The Loyalty Demanded by the Present Crisis* (1864); *Creation, a Transference of Power* (1900); *The Passage from Mind to Matter* (1901).

COOPER, JAMES (1810-63). An American statesman and soldier, born in Frederic Co., Md. He graduated in 1832 at Washington College (Pa.), studied law in the office of Thaddeus Stevens at Gettysburg, Pa., and, upon his admission to the bar in 1834, began practice in that place. In 1839-43 he was a Whig member of the Federal House of Representatives, in 1843-48 of the Pennsylvania Legislature, of which he was Speaker in 1847, and in 1848 was elected State Attorney-General. From 1849 to 1855 he was United States Senator. Upon the outbreak of the Civil War he organized the Maryland volunteers, and in 1861 was appointed a brigadier general in the volunteer army. He was subsequently assigned to the command of Camp Chase, Columbus, Ohio, where he was stationed until his death.

COOPER, JAMES (1846-). A British theologian, born at Elgin, Scotland. After studying at the University of Aberdeen he was minister of St. Stephen's at Broughty Ferry in 1873-81 and of the East Parish of St. Nicholas at Aberdeen in 1881-96, and then became professor of church history in the University of Glasgow. The degrees of D.D., Litt.D., and D.C.L. were conferred upon him, respectively by Aberdeen, Trinity College (Dublin), and Durham. He was president of the Scottish Ecclesiological Society in 1903, 1911, and 1912, edited the Society's *Transactions*, and wrote and edited various books on ecclesiology, including *Reliques of Ancient Scottish Devotion* (1913), and a volume of sermons.

COOPER, JAMES FENIMORE (1789-1851). An American novelist, born at Burlington, N. J., Sept. 15, 1789. His father came of good English and Quaker stock; his mother, Elizabeth Fenimore, was a Swede and also of Quaker ancestry. He was the eleventh of 12 children and in his second year was taken by his father, William, to a large estate that he had acquired near Otsego Lake shortly after the Revolution. Here had been already laid out the site of Cooperstown. For some years the family lived in a log house, but the settlement prospered, and, determining to make it his home permanently, Cooper's father, who for many years represented the district in Congress, began in the year 1796 to build a manor house, Otsego Hall, which was for many years the finest residence in that region. That Cooper thus spent his boyhood years on the frontier of civilization, surrounded by primeval forests, and never far removed from the possibility of Indian raids, while in daily contact with the red men who came to Cooperstown for trade, was most important to his future literary development. The environment stimulated his imagination, made him responsive to the sense of mystery, and gave him materials for the most important section of his writings, the *Leatherstocking Tales*. He passed through the village school and received private instruction in the family of the Rev. Mr. Ellison, rector of St. Peter's, Albany, whose refined culture and un-American ideals had a not altogether desirable effect on the style and character of the future novelist, who was something of an aristocrat at heart. In

January, 1803, Cooper went to Yale College. Here he learned more out of doors than in the classroom. Indeed, he neglected his studies with such persistent defiance of academic restraints that he was expelled in his third year. His father resented the action of the faculty, but readers may be glad that the future novelist of the sea should have been led to choose a naval career. To fit himself for this, there being no naval academy at that time, Cooper entered the merchant service as a sailor before the mast (September, 1806), and after 16 months' experience on the sea, in London, and at Gibraltar, received a midshipman's commission (Jan. 1, 1808). He served for a time on the *Vesuvius*, then with a construction party on Lake Ontario, where he saw a new aspect of frontier life and became familiar with the details of shipbuilding. He saw also other forms of naval service before his resignation in 1811. Meantime he had been married (Jan. 1, 1811) to a daughter of John Peter DeLancey, who came of a conspicuous Tory family. The marriage was happy, but Cooper's resignation on the eve of the War of 1812 did not escape criticism, for a Tory connection seemed to imply lack of patriotism. For the next 10 years he lived chiefly in Westchester County, his wife's home, devoting himself to farming and becoming the father of six children before he conceived the idea of authorship. As it was, he began to write, less in emulation of the success of others than through conviction of their failure. He had been reading an English novel aloud, when he suddenly said to his wife, "I believe I could write a better story myself," and proceeded to try it. But *Precaution* (1820), dealing with high life in England, about which Cooper knew nothing, was naturally a failure and wholly uncharacteristic of his future work. Then, when advised to deal with more local themes, he remembered a story that John Jay had told years before about a spy, and his home in Westchester, the scene of much fighting during the Revolution, furnished a fit stage for the play of his fancy. The result was *The Spy* (1821-22), which achieved a success till then unapproached in America and determined its author to pursue his new-found career. It proved to a very self-conscious generation that it was not impossible for America to produce a novelist almost worthy of being ranked with the great author of *Waverley*. Even to-day it remains a stirring narrative that deals adequately with important events, and in Harvey Birch, the Spy, it has added to our national fiction one of its few imperishable characters.

In 1823 Cooper began what is now known as the "Leatherstocking Series" with *The Pioneers*, for he did not compose the famous five romances in their natural chronological order. Early in the next year he published *The Pilot*, thus practically for the first time joining the ocean to the domain of fiction, just as he had previously added the backwoods and as he was soon to add the prairie. He also added to Harvey Birch and Natty Bumppo his third great character, Long Tom Coffin. He now removed to New York City and shortly after had a serious illness. His next novel was *Lionel Lincoln* (1825), a story of Boston during the Revolution. This was not specially successful, but in 1826 *The Last of the Mohicans* placed him at the summit of his popularity and probably represented his highest achievement.

In 1826 he changed his name, in compliance with the wishes of his grandmother, from simple James Cooper to James Fenimore-Cooper, but soon dropped the hyphen. He could not easily get rid of the misapprehensions caused by his act in a crude society. Immediately afterward he went abroad and resided there for seven years, during which time he was the recipient in foreign capitals of many attentions from distinguished people, but felt called upon, as in *The Bravo* (1831), to proclaim vigorously the beneficent greatness of republican institutions. His pride in the better features of American government and society did not, however, prevent him from being one of the first Americans to perceive how really crude his fellow citizens were, and he told them their faults with a frankness that was not discreet. He exploited his prejudices against New England and in favor of the Episcopal church, and soon became in his native land a synonym of all that was unpopular and snobbish. His honest, if overemphatic, strictures outweighed with his comically sensitive critics such fine romances as *The Prairie* (1827), *The Red Rover* (1828—the dates of Cooper's books are often hard to determine exactly), and the less interesting, but creditable, *Water Witch* (1830). But the fault was not entirely on the side of his countrymen, for he took an injudicious part in more or less unnecessary foreign discussions of American political affairs.

On his return to America, in 1833, he at first spent his winters in New York City, but soon took up his permanent abode at Cooperstown. Here he published several volumes of travels, and still not restraining himself from criticism of his countrymen, especially in his story, *Home as Found* (1838), he was again embroiled in bitter controversy and exposed to almost incomprehensible vituperation, which was increased through the fact that in 1837 a dispute had arisen with regard to the claims of his townspeople upon a certain tract of the Cooper estate. The great author's determination to enforce his plain rights was distorted by the newspapers into a heinous crime. And, ironically enough, just at that time this proud aristocrat was being denounced in England for his obtrusive republicanism. But Cooper still plied his pen and produced his *History of the Navy of the United States* (1839), his *Pathfinder* (1840), his *Deerslayer* (1841), *The Two Admirals* (1842), and *Wing-and-Wing* (1842). For the admirable English and Mediterranean setting of the last two stories he was as much indebted to his European stay as he was to his return to the home of his boyhood for his equally admirable setting of the two novels preceding. Mention should be made here of an "antirent series" of novels, dealing with the well-known demagogic agitation against the proprietors of certain large estates in New York. These were *Satanstoe*, *The Chain-Bearer*, and *The Redskins* (1845-46). The first of them contains one of the best pictures that we have of life in Colonial New York.

Yet, while Cooper was thus composing novels which have been translated into many languages and have gained him an undying reputation abroad, especially in France, he was bringing libel suits against many of the Whig editors of his native State, among them Horace Greeley, Thurlow Weed, and James Watson Webb. He was Quixotic enough to conduct these suits him-

self, and he proved able to win verdicts which finally brought his critics to their senses, although they did little to restore his popularity. A later generation smiles wonderingly at the whole matter, but sympathizes with the pugnacious author. The last few years of Cooper's life saw the publication of enough novels to occupy an ordinary lifetime, but they added little to his reputation. He maintained his proud independence to the last, and just before his death forbade his family to give any biographer access to his papers—an injunction which has been obeyed,* but which alone did not prevent the life written by Prof. T. R. Lounsbury (q.v.) in the *American Men of Letters Series* (Boston, 1885) from being an admirable piece of work. Cooper died at Cooperstown, N. Y., Sept. 14, 1851. Six months after his death a public meeting in New York, addressed by Daniel Webster and William Cullen Bryant, did something to atone for the evil treatment America had accorded one of the very greatest of her writers.

But even after the lapse of half a century it can hardly be said that Americans are prepared to do full justice to Cooper. His great romances are frequently spoken of as if they were, in the main, fit reading for boys only. His undoubted defects, such as his careless style, his exploitation of his prejudices, his stilted conversations, his inability, as a rule, to draw women who were not distressingly prim, the fact that he wrote entirely too many novels, and that not a few of his men are as wooden as his women—these grave faults have been put forward, while his greater merits have been kept in the background. For, when at his best, as in nearly all the romances named above, Cooper was a great novelist. He had the narrative faculty of carrying his readers along, however much they might grumble at this detail or that. In "Leatherstocking" he added a character to the small gallery of the world's fictitious personages—something no other American has ever done, except Mrs. Stowe—and in Harvey Birch, Long Tom Coffin, and other sailors, as well as in Uncas, Chingachgook, and other Indians, he created characters of undying power. His Indians, at whom it was once the fashion to sneer, as the creations of a romantic fancy, are now said by ethnologists to be far from overdrawn portraits. He was, as we have seen, practically the first writer to extend the domain of fiction over the sea, the primeval forest, and the prairie. If he was in a way a follower of a still greater romancer, Scott, he won the enthusiastic commendation of two great writers of fiction, Balzac and Hugo, and he has the unique credit of having written a prose epic of the planting of his native country, which is as spacious and free as the virgin woods and lakes amid which its scenes are laid. In other words, Cooper is a large genius, who ranks well with his fellow romancers. It is almost absurd to judge one of Cooper's rapidly written romances by the canons one might legitimately apply to a short story by Daudet or Maupassant. When the man is judged in the large by the effects of his best works, and when he is compared with his rivals like Simms and Bird, and with his predecessor, Brockden Brown, his full genius and the service he did American literature emerge splendidly. For carrying power his work has probably had no equal in America; with fewer crying faults he would

in all likelihood have been our greatest author.

A full bibliography of Cooper is not needed here, but to the works already named may be added: *The Wept of Wish-ton-Wish* (1829); *The Heidenmauer* (1832); *The Headsman* (1833); *Sketches of Switzerland* (1835); *The American Democrat* (1838); *The Chronicles of Cooperstown* (1838); *Homeward Bound* (1838); *Mercedes of Castile* (1840); *Wyandotté* (1843); *Ned Myers* (1843); *Afloat and Ashore* (1844); *The Crater* (1847); *Jack Tier* (1848); *Oak Openings* (1848); *The Sea-Lions* (1849); *The Ways of the Hour* (1850). Lounsbury's *Life*, already mentioned, contains a good bibliography and probably the best criticism that has yet been devoted to Cooper. Consult also: Clymer, *James Fenimore Cooper* (1901); Richardson, *American Literature*, vol. ii (New York, 1887-88); Wendell, *A Literary History of America* (ib., 1900); Brownell, *American Prose Masters* (ib., 1909)—the chapter "Cooper"; J. Erskine, *Leading American Novelists* (ib., 1910); M. E. Phillips, *James Fenimore Cooper* (ib., 1912); and essays by Mark Twain, T. W. Higginson, and Brander Matthews.

COOPER, LANE (1875-). An American educator. He was born in New Brunswick, N. J.; graduated at Rutgers College in 1896; studied at Columbia, Yale, Berlin, Leipzig, and the Collège de France, and in 1902 became an instructor and in 1906 assistant professor of English at Cornell University. In his special field—English literature of the early nineteenth century—he published: *The Prose Poetry of Thomas De Quincey* (1902); *The Power of the Eye in Coleridge* (1910; in *Studies in honor of J. M. Hart*), and a monumental *Concordance to the Poems of Wordsworth* (1911). He also wrote: *Theories of Style* (1907); *A Manual of American Literature* (1909, in the "Tauchnitz Series," with Theodore Stanton and others); *The Function of the Leader in Scholarship* (1911).

COOPER, MYLES (1737-85). An English clergyman, scholar, and educator, second president (1763-76) of King's College (now Columbia University). He was educated at Queen's College, Oxford (M.A., 1760), was appointed a fellow of that college, and in 1762, on the recommendation of the Archbishop of Canterbury, came to America as fellow of King's College, professor of moral philosophy, and assistant to President Samuel Johnson. In 1763 he succeeded Dr. Johnson in the presidency. He strengthened the curriculum and to the academic department and divinity school already existing added a medical school, which was organized in 1768, and in 1769 conferred the first medical degrees bestowed in America. In 1771 he visited England on behalf of the college. A true Oxonian, a High-Churchman, and a Tory, he supported the cause of King George against the Colonies, and by such vehement pamphlets as *A Friendly Address to All Reasonable Americans on the Subject of our Late Political Confusion* (1775), *What Think ye of the Congress Now?* (1775), *The American Querist* (1774), made himself cordially detested. On May 10, 1775, he escaped from a mob attack upon the college and the next day took passage for England. He there received the livings of Sulhamsted-Abbots and Cowley and afterward became senior minister of the English chapel at Edinburgh. Among those trained under him were Gouverneur Morris, Robert R. Livingston,

John Jay, and Alexander Hamilton: He was perhaps the finest classical scholar in eighteenth-century America.

COOPER, PETER (1791-1883). An American inventor, manufacturer, and philanthropist, born in New York City. He assisted his father in his successive occupations of hatter, brewer, and brickmaker; gained such education as his limited means allowed, and from 1808 to 1812 was apprenticed to a carriage builder. He invented a machine for shearing cloth, which was used during the War of 1812-15; then manufactured cabinet ware; was for a time a grocer, and finally established a glue and isinglass factory on Long Island, continuing the business for more than 50 years and acquiring great wealth. In 1828 he built large iron works in Baltimore, and afterward a rolling and wire mill in New York, and blast furnaces in Pennsylvania. In 1830 he designed and built the first American locomotive engine, a rude little contrivance, which he exhibited on the Baltimore and Ohio Railroad, and about 1845 made at Trenton the first rolled-iron beams for building purposes. He was among the earliest to promote the laying of the Atlantic cable and for 18 years was president of the New York, Newfoundland, and London Telegraph Company. He invented a method of propelling canal boats by an endless chain, which, while not adopted at the time, was used later on the Delaware and Raritan Canal. Mr. Cooper served in both branches of the New York Common Council and as a trustee in the Public School Society, an organization formed to advance the cause of public education. Upon the union of that body with the Board of Education he became a school commissioner. In 1876 he received the Independent nomination for President. Peter Cooper engaged in many forms of mercantile life. In gratitude for his success and wishing to afford others opportunities which he himself had never enjoyed, he established (1857-59) "Cooper Union" (q.v.) in New York City. Consult Carter, "Life of Peter Cooper," in *Century Magazine* (New York, 1883-84), and Raymond, *Peter Cooper* (ib., 1901).

COOPER, PHILIP HENRY (1844-1912). An American naval officer, born at Camden, N. Y. After graduating from the United States Naval Academy in 1863 he served on the *Constellation* in the same year and on the *Richmond* in 1863-65, participating in the battle of Mobile Bay and the siege of Fort Morgan. He served on the *Powhatan* in 1865-67, was for two years an instructor at the Naval Academy, took part in the Tehuantepec surveying expedition (1870-71), and from 1894 to 1898 was superintendent of the Naval Academy. During the Spanish-American War he commanded the *Chicago*. He was promoted through the various grades to be rear admiral in 1902, and was squadron commander in 1903 and commander in chief of the Asiatic station in 1904. He was retired in the latter year.

COOPER, SUSAN FENIMORE (1813-94). An American author, born at Scarsdale, N. Y. She was the daughter of James Fenimore Cooper, the famous American novelist. Her chief publications include: *Rural Hours* (1850; 6th ed., 1854), a year's journal of country scenes; *Rhyme and Reason of Country Life* (1854), a volume of selections; *Fields Old and New* (1854); *Mount Vernon to the Children of America* (1858).

COOPER, THEODORE (1839-). An American engineer, born at Cooper's Plains, N. Y., and educated at Rensselaer Polytechnic Institute. From 1861 to 1872 he was an engineer officer in the United States navy and in 1865-66 assistant professor at the Naval Academy. He was associated with James B. Eads in the construction of the St. Louis Bridge; later was superintendent of the Delaware Bridge Company's shops, and then assistant general manager and superintendent of the Keystone Bridge Company, and acted as assistant engineer in charge of the construction of the first elevated railroads in New York City. From 1879 to the time of his retirement he was a consulting engineer on many important bridges, buildings, and aqueducts. In 1903 he was a member of the board of experts on the Manhattan Bridge plans. His writings include *General Specifications for Iron and Steel Highway Bridges and Viaducts* (1885; 7th ed., rev., 1909) and *American Railroad Bridges* (1889).

COOPER, THOMAS (1759-1840). A British-American scientist, political economist, educator, and publicist, conspicuous for his versatility and his radicalism in politics. He was born in London, studied for a time at Oxford, and was admitted to the bar. In 1792 he spent four months in Paris and while there acted with James Watt, the famous inventor, as a delegate from the Manchester Constitutional Society to the Patriotic Societies of France. For this both he and Watt were warmly criticized at home, especially by Edmund Burke, who took them to task in a somewhat intemperate speech before Parliament. To this speech Cooper replied in a caustic pamphlet entitled *A Reply to Mr. Burke's Invective Against Mr. Cooper and Mr. Watt* (1792), the circulation of which in a cheap edition designed to reach the lower classes was prohibited by the British government. After an unsuccessful attempt, as a bleacher and calico printer, to apply a secret process learned in France for preparing chlorine from sea salt, he emigrated to America in 1795, and for a short time practiced law in Northumberland Co., Pa. He soon began to take an active part in support of the anti-Federalists in current political discussions, and for a violent attack upon President John Adams in the *Reading Advertiser* of Oct. 26, 1799, was tried under the Sedition Law (see ALIEN AND SEDITION ACTS), was convicted of libel, and, besides being fined \$400, was sentenced to six months' imprisonment. He was appointed a land commissioner for the State of Pennsylvania in 1806 and subsequently acted as president judge of a common pleas district until 1811, when he was removed because of his alleged arbitrary conduct and overbearing temper. He was professor of chemistry in Dickinson College, Pa., from 1811 to 1814, and of mineralogy and chemistry in the University of Pennsylvania from 1816 to 1819, and from 1820 to 1834 was president of South Carolina College, where he acted also as professor of chemistry and political economy and for a time of "rhetoric, criticism, and belles-lettres." From 1834 until his death he was engaged, with Dr. McCorr, in revising the statutes of South Carolina, which were published in 10 volumes (Columbia, 1836-41). Though he was strongly condemned by many for his radicalism in philosophy, religion, and politics, he undoubtedly exercised a powerful influence in the South, especially in South Carolina, and did much to inculcate in the minds of the politicians

of his State the doctrine of extreme States' rights, nullification, and free trade. In a speech which was widely circulated in 1827 he openly urged both nullification and secession upon South Carolina, and he was unquestionably responsible to a considerable degree for the nullification measures of 1832-33. Cooper was highly esteemed by Thomas Jefferson, who secured for him the appointment as first professor of natural science and law in the University of Virginia—a position he was forced to resign on account of the fierce attacks made on him by the Virginia clergy. Besides editing *The Emporium of Arts and Sciences* at Philadelphia from 1812 until 1814 and writing numerous pamphlets and articles for the press, he published: *Some Information Respecting America* (1794); *Political Essays* (1800); *An English Version of the Institutes of Justinian* (1812); *A Practical Treatise on Dyeing and Calico Printing* (1815); *Lectures on the Elements of Political Economy* (1826); and *A Treatise on the Law of Libel and the Liberty of the Press* (1830).

COOPER, THOMAS (1805-92). An English Chartist agitator, poet, and author. In youth he was a shoemaker, but at the age of 23, after a hard-gained education, became a schoolmaster. He was the leader of the Leicester Chartists in 1841, lectured during the riots of that year, was found guilty of conspiracy and sedition, and was sent to prison for two years. While in jail he wrote an epic poem, *The Purgatory of Suicide* (1845), and a series of stories entitled *Wise Saws and Modern Instances* (1845). Some time afterward he wrote papers on *The Condition of the People and Triumphs of Perseverance and Triumphs of Enterprise* (1856). In 1848 he was lecturing; in 1849 he edited a radical penny paper, *The Plain Speaker*, and in 1850 a free-thinking publication, *Cooper's Journal*. Near the close of 1855 he gave up skepticism and afterward lectured in support of Christianity. He published: *The Bridge of History over the Gulf of Time* (1871); *A Life of himself* (1872); several volumes of sermons and Christian evidences; *Collected Poems* (1878); and *Thoughts at Fourscore and Earlier* (1884).

COOPER, THOMAS APTHORPE (1776-1849). An actor who was born at Harrow, England, but came to this country in 1796 and for many years held a leading place on the American stage. He made his debut in Edinburgh and afterward played at Covent Garden, London, before coming to America, where he made his first appearance in Philadelphia, in the role of Macbeth. He quickly won great popularity. Later he went to New York and remained several years, gaining a wide reputation. In 1803-04 he was again in London and had a successful engagement at Drury Lane, in Shakespearean tragedy. A later visit to London, in 1827, met with a less flattering reception, for which he was requited, however, on his return to America; but before he retired from the stage his popularity in this country had greatly declined, as had also, apparently, his artistic talents. Among his best parts were Shylock, Richard III, Othello, Damon, and Virginius. In later life he was for a time a customhouse officer in New York, a son of President Tyler having married one of Cooper's daughters. It was at the home of this daughter in Bristol, Pa., that Cooper died. Consult: Ireland in Matthews and Hutton, *Actors and Actresses of Great Britain and the United States*, vol. ii (New York, 1886).

COOPER, THOMAS SIDNEY (1803-1902). An English animal painter, born in Canterbury. He was a pupil of the Royal Academy in London, and of Verboeckhoven in Brussels. He first exhibited at the Royal Academy in 1833, where he continued to send work for 69 consecutive years. He attained considerable reputation as a painter of cattle, and the skill and spirit with which he depicted them made his works very popular, but after 1860 he lost the originality that had been his distinguishing quality. Among his numerous pictures, in some of which Frederick R. Lee and Creswick painted the landscapes, are: "Ettrick Shepherds" (1842); "Cattle at Pasture" (1843); "River Scene" (1855, National Gallery); "Cow and two Sheep" (ib., 1860); "God's Acre" (1875); "Isaac's Substitute" (1880); and "Harbledown, near Canterbury" (1902). Consult his autobiography, *My Life* (1890).

COOPER, WILLIAM RANSOM (1868-), A British consulting engineer. He was educated at Central Technical and King's colleges and the Royal University of Ireland. In 1895 he joined the staff of James Swinburne as an assistant consulting engineer. From 1899 to 1901 he edited *Science Abstracts*, and in 1906 he became editor of the *Electrician*. He published *Primary Batteries* (1901) and *"The Electrician" Primers* (1906); and also scientific papers, including the following: *Electric Traction on Tramways* (1902); *Alternate Current Electrolysis* (1905); *Electricity Supply* (1908); *Dust Prevention* (1909); *Heat Tests of Electrical Machines* (1913).

COOPERAGE (from *coop*, AS. *cypa*, OS. *cōpa*, OHG. *chuofa*, Ger. *Kufe*, *vat*, from ML. *cōpa*, Lat. *cupa*, *vat*, Gk. *κύπη*, *kyē*, hole, Skt. *kūpa*, well). The art of making vessels of pieces of wood bound together by hoops. It is a very ancient art, such vessels having been in use among the Romans at the beginning of the Christian era. The upright pieces forming the sides of a barrel, or cask, or other cooper's work, are called *staves*; and, as casks are usually larger in the middle than at the top and bottom, this swelling, called the *belly* or *bulge*, is formed by skillfully shaping each stave so that it shall form part of the required double conoid, and so that, when all are built and hooped together, their edges shall coincide perfectly. For this purpose each stave is made broadest in the middle, and narrowed down in a curved line towards each end. A skillful cooper can produce this curve so accurately that no further fitting or alteration is needed when the staves are put together. The staves are made to meet at their inner edges, and by driving the hoops very hard, the inner part is compressed until the slight gaping outside is closed, and thus slight inaccuracies of fitting are remedied. There are several branches of cooperage. The *wet*, or *tight*, cooper makes vessels for holding liquids. The *dry*, or *slack*, cooper does inferior work, such as barrels for containing dry goods, where an inferior degree of accuracy is sufficient. The *white* cooper makes churns, pails, etc., which for the most part have straight sides. The best wood to employ is oak, which must be thoroughly dried before the staves are put together. Other woods employed are elm, pine, gum, beech, and bass in the order named. In warm countries the drying of the sun is sufficient, and casks are therefore mounted in summer only; but in northern countries artificial drying is commonly resorted to. The hoops are hammered down from the

narrow to the wide part of the cask, by means of a mallet striking a piece of wood or iron held against the hoop. Iron hoops are sometimes put on hot, in order that their contraction on cooling may bind the work together.

Like most other processes of manufacture, the cooper's trade has changed in modern times, with the substitution of machinery for handwork. The machinery used is commonly termed "barrel-making machinery"; but it is employed, with suitable modifications, in making casks and kegs as well as barrels. Barrel-making machinery may be divided into machines for the manufacture of staves, machines for manufacturing heads, and machines for setting up and finishing the barrel. For cutting staves a stove cutter with a knife 36 inches in length and $6\frac{1}{2}$ inches in width with a face ground to a circle of 20 inches may be used, or a cylindrical stove saw, the latter being generally used for making slack staves from hemlock, jack pine, pitch pine, spruce, and other soft woods. It is a cylindrical sheet, having teeth upon one end. The bolts or blocks of wood, after having been steamed and cut on the equalizer so that they are of the desired length and square on the ends, are clamped in the usual manner, and the staves fall within the cylinder. They are then laid upon an endless conveyer, which carries them against two circular saws that cut them a definite length. Each piece is then placed in a pair of clamps, and moved against a rotary wheel provided with cutters, that dress the edge to the required bilge and bevel; the *bilge* is the increased width midway between the ends, which causes the enlarged diameter of the cask at the middle; the *bevel* is the angle given to the edge conforming to the radius of the cask. The surface of the stave is smoothed by passing it under revolving cutters, a recent form of machine takes off the surplus wood from riven staves without cutting across the grain, following winding or crooked pieces as they are split from the block. The heads are usually made of several flat pieces jointed and fastened with dowels, or pins of wood. The edge of each piece is pushed against the side of a rotary disk, provided with cutters that instantly straighten it; it is then pushed against bits that bore holes for the pins to be afterward inserted by hand. Several boards being pinned together, enough to make a head, the whole is first smoothed on one side and dressed to a uniform thickness; then it is clamped between two disks, and, as these disks turn, a saw trims the head into a circle with a beveled edge; if the wood is green, an oval form may be given to provide against shrinking.

The barrel has next to be "set up." A sufficient number of staves are set into a frame, their edges refitted if necessary; stout iron hoops, called "truss hoops," pushed up from below, grasp the lower ends tightly, and the whole may be lifted from the mold. One end of the barrel is formed, but the other end is open and flaring. A rope is passed about the open end and taken to a windlass, and the staves are drawn together by tightening the rope; in this stage the barrel is heated, to cause the staves to yield more easily to their required form. The barrel is now leveled by placing it upon a horizontal bed and bringing down upon it a powerful disk that presses upon its ends and forces the staves into their proper position. A machine is devised which trusses and levels the barrel at a single movement. The slack barrel stands in its truss

hoops, two on each end; those of the lower end rest on strong supports; those of the upper end are seized by hooks whose handles pass down through the platform to a common level; when all the parts are in place, powerful machinery pulls the upper trusses down, at once driving the barrel into the lower trusses, drawing together both ends, and leveling the whole. Each end of the shell, thus made, passes under a rotary cutter which forms a *croze*, or groove, to receive the head, and chamfers, or bevels, the ends of the staves. The heads are put in and the hoops set by hand. The barrel is then made to turn under a smoothing tool and rapidly finished. For the making of slack barrels, consult: Wagner, *Cooperage: A Treatise on Modern Shop Methods and Practice* (Yonkers, N. Y., 1910). For description of wooden barrels used in transportation of liquids and especially the series of tests to secure better specifications and designs, consult Newlin, "Tests of Wooden Barrels," *Bulletin of the United States Department of Agriculture*, No. 86 (Washington, 1914). Statistical Bulletins on tight and slack cooperage stock are compiled by the U. S. Census Bureau in co-operation with the finest service of the Department of Agriculture and are published annually. Other bulletins from the Forest Service dealing with cooperage are issued from time to time. See BARREL.

COOPERAGE (from Dutch *koper*, sort of boat, from *kopen*, Ger. *kaufen*. Goth. *kaupōn*, AS. *cypan*, to buy, from Lat. *caupo*, innkeeper). The sale of tobacco, alcoholic liquors, or clothing to fishermen in the North Sea, or the barter of these articles for fish, nets, or other such property. As the goods for sale had escaped duty, the business was profitable, but it demoralized the fishermen. In 1882 a convention was held at The Hague, and a mission was founded for supplying the fishermen with good clothing, literature, etc., at a fair cost, and in 1887 six nations—Great Britain, Germany, Belgium, Denmark, France, and the Netherlands—signed an agreement to prohibit the sale of intoxicating liquors to fishermen at sea. Next year Great Britain embodied the terms of this convention in the North Sea Fisheries Bill. This act was repealed five years later and replaced by the North Sea Fisheries Act, 1893, which was more explicit than the former act. Consult Mather, *Nor'ard of the Dogger* (1888).

COÖPERATION (Lat. *cooperatio*, from *cooperari*, to cooperate, from *co-*, together + *operari*, to work, from *opus*, Skt. *apas*, work). In the widest sense of the word, all production is the result of the cooperation of nature, labor, and capital; but economists have generally restricted the term to three classes of enterprises, viz., (a) cooperative distribution; (b) cooperative production; and (c) cooperative societies for banking or loaning money. It is sometimes extended to profit sharing, by which the employee shares beyond his wages to some extent in the profits of his employer; but this is a misapplication of the term, for cooperation starts with the worker, while profit sharing starts with the employer.

Coöperative Distribution. This is sometimes called "consumers' cooperation," and is an effort to do away with the middleman and to have the consumers themselves organize distributive stores and reap the profit which would otherwise fall to the storekeeper. There can, of course, be no doubt that under existing condi-

tions of production the merchant who serves as an intermediary between the producer and the consumer, or between the wholesale dealer and the retail purchaser, performs an important social service for which he is entitled to a reasonable remuneration; but unfortunately the number of these intermediaries has increased beyond all measure; and, as they all must strive to subsist, there is still, in spite of great improvements in the distributive process, a vast difference between wholesale and retail prices. A French economist, Prof. Charles Gide, estimates that more than one-tenth of the population of France depends on commerce for its subsistence. In other words, every 10 persons support one intermediary. The economic waste of commercial competition indicated by these facts aroused, many years ago, the condemnation of such social reformers as François Fourier (q.v.) and Robert Owen (q.v.); but the first lasting, successful attempt to dispense with the middleman was made in 1844, by 28 poor weavers of Rochdale, near Manchester. They organized, under the name of Equitable Pioneers of Rochdale, to supply themselves with provisions, beginning with flour, butter, sugar, and oatmeal. Business was transacted at first in a small room in Toad Lane, with a capital of £28, each member having subscribed an equal share. They overcame all difficulties and outlived not only internal divisions and jealousies, but also external prejudices and opposition. The success of the store led to many imitations, a considerable number of which, however, had only a very short existence, owing in many cases to want of harmony among the members, bad management, insufficient capital, or dishonest officials. Notwithstanding all difficulties, coöperation continued to increase, and in 1864 no less than 395 societies in Great Britain made returns to the registrar, possessing a share and loan capital of £774,000, doing an annual trade of nearly £3,000,000, and making an annual profit of £223,000. It was then proposed to form a federation of societies for the purpose of undertaking the wholesale trade of the movement, thereby protecting the societies from the imposition of the wholesale traders and securing the profits of wholesale dealing. The North of England Wholesale Society began business in Manchester in 1864, and in 1871 became the English Wholesale Society. This organization has purchasing and forwarding depots not only in England and Ireland, but in New York, Hamburg, Copenhagen, Calais, and Rouen. It owns six steamships, which ply between England and the Continent. Following the same lines, the Scottish Wholesale Society was formed in 1868 and commenced business in Glasgow. Both of these organizations have prospered and grown and now supply a large portion of the goods sold by the retail societies. They not only purchase direct from the producers, but produce on their own account, or in connection with other associations. Among the industries in which they engage are the making of boots, clothing, furniture, flour, and butter. In 1912 the productive workers employed by the system numbered 51,072, while the employees engaged in the work of distribution numbered 71,019. The number of societies in 1912 was 1557, with a membership of 2,661,799; the aggregate trade transacted, £111,582,779, with profits of £12,024,481.

In Germany coöperative distribution had its beginnings in the two decades 1850-70. It gained

little headway until after 1890, when it came under the influence of British experience. The German coöperative stores, originally forming a single association, were organized in 1902 in two competing central associations, the Allgemeiner Verband, controlling in 1905 260 stores and doing a business of 58,000,000 marks, and the Zentral Verband, controlling 787 stores, with a business of 188,000,000 marks. The former is essentially a middle-class, the latter a working-class organization.

In the United States isolated experiments of a similar nature were made as early as the eighteenth century. In 1847 the Workmen's Protective Union of Boston organized a successful store, which was afterward carried on under the name of the New England Protective Union. The Patrons of Husbandry, founded in 1867, for a time developed a variety of coöperation by encouraging the local "granges" to form purchasing clubs and to employ agents to buy supplies. The Sovereigns of Industry, a secret order with ritual, founded in 1874 to do for the artisan classes what the Patrons of Husbandry were doing for the farmers, founded numerous coöperative stores on lines resembling the Rochdale Pioneers. In 1877 the organization was doing a business of \$1,089,372, but by 1880 the order had collapsed. No reliable statistics of coöperative stores in the United States are available.

The foundation of a coöperative store on a small scale is a simple matter in itself. A group of consumers meet to discuss rules and regulations for the enterprise and agree to furnish the necessary capital by subscribing, say, five dollars each. As coöperative stores almost always do business on a cash basis, the original capital need not be very great. Each share of capital receives a fixed rate of interest, say, 5 per cent. The dividends may be credited as payments on additional shares up to the maximum number of shares allowed any one shareholder. In this wise the store serves also as a savings bank for the members. Usually the money subscribed as share capital need not all be paid at once; weekly payments of 10 cents are customary. Whatever profit the store makes after deduction of the interest on loans, the charge for depreciation in the value of the stock and plant, 5 per cent dividend on the capital, a reserve fund, and perhaps a bonus to employees, is divided among the purchasers according to the respective amounts of their purchases. Goods are sold at the usual prices of private stores. Outsiders may buy at the store, but only members receive shares in the gains. These shares are also usually credited as payments on the stock shares until they are paid in full. The amount of each member's purchase is recorded by means of checks distributed with every sale. The management of the business is in the hands of an executive committee, which appoints the storekeepers and oversees the purchase of goods and the finances. It is evident that the success of the society will depend largely on this committee, which must be honest and efficient.

Coöperative Production. An attempt to solve the more difficult problem of doing away with the employer, the "entrepreneur," by having the workers furnish their own capital. Under our present economic system the distribution of wealth among the agents of production involves a grave conflict of interests, which may lead to industrial warfare and jeopardize the welfare

of society by separating laborers and capitalists into distinct antagonistic classes; but the relation between capital and labor is most satisfactory when there is no sharp separation into classes. Productive coöperation, therefore, by uniting men in the twofold capacity of workers and capitalists, has been recommended by many social reformers as a cure for our social ills. The voluntary union of a number of workers to conduct an enterprise collectively is by no means a modern invention. Schmoller and other economic historians have shown that it is, indeed, one of the earliest forms of industrial organization. Coöperative enterprises were often undertaken by guilds, each member furnishing a share of the small capital required. But their conservatism of method led to their displacement by capitalistic industry, and it is not until the nineteenth century that we find widespread attempts to reestablish coöperative productive enterprises; but only a few of them, notably among masons and piano makers, were successful. The modern system of coöperative production dates in England from the close of the eighteenth century. The oldest-known association is the Hull Anti-Mill Society, founded in 1795 for the production of flour. The object of this undertaking was to curb the exactions of private millers rather than to improve the position of labor. Societies with the latter object were founded in considerable numbers in the decades 1830-50 under the influence of Owen, and later of the Christian Socialists. These enterprises were only moderately successful. The extension of consumers' coöperation in the latter half of the nineteenth century gave a considerable impetus to producers' coöperation, especially in organizations affiliated with the coöperative stores, but also in organizations producing for the open market. In 1910 there were of the latter in England 16 coöperative societies in textile manufactures, 20 in agricultural production, 16 in boots and leather manufactures, 10 in the metal trades, 11 in furniture and wood-working, 14 in printing, and 10 in miscellaneous industries. These 106 societies had a share capital of £688,990, and their products were valued at £1,392,237.

The first productive association in the United States of which we have any record was that of the Boston Tailors' Associative Union, which was formed in 1849, but did not last long. There were many other experiments of a like nature, the most promising of which seems to have been the stove foundry of the Iron Moulders' International Union, started in 1867 in Allegheny County, Pa. But the paid-up capital proved insufficient at a critical moment, and the enterprise failed. By far the most successful experiment in the United States is found among the coopers of Minneapolis. In 1868 a few journeymen coopers made an attempt to manage industry for themselves; they were so successful that in 1874 a strong organization known as the Coöperative Barrel Company was formed, with a membership of about 20 coopers. They bought a shop for \$3000, paying \$1000 cash. The company became exceedingly prosperous and is still in successful operation. The wages paid are equal for members and nonmembers employed; profits are distributed according to stock holdings, but all members hold equal amounts of stock.

This example has been followed by others and frequently with success. Experience seems to

show that where articles are produced to order and not for the general market, coöperative production may succeed, but that these enterprises fail when they are confronted with the difficulty of adjusting the supply to the variations of the market demands. Coöperation has made extensive progress in connection with certain agricultural processes, such as the manufacture of cheese, butter, etc. Such coöperation, however, is essentially an incident in the marketing of products and has no close relation to the above-described forms.

Coöperative Credit and Banking Organizations. These are founded for mutual financial aid and have been wonderfully prosperous in Germany, where they do a business of hundreds of millions of dollars. In 1849 Herr Schulze (Schulze-Delitzsch) founded a coöperative society to purchase raw material, among 13 cabinetmakers in Delitzsch, his native town. In the next year he founded the first of his loan associations (*Vorschussvereine*), which differed from the earlier banks in that the persons to whom loans could be granted must themselves be members of the association, paying regular monthly contributions. They thus themselves indirectly furnished the security for the credit afforded them. While these loan associations put the lender's interest foremost, Raiffeisen, another German, born in the Westerwald, organized a coöperative bank in 1849 which placed the borrower's interest as the keystone of his system. Both systems have spread over the country, especially Schulze-Delitzsch's banks. The plan has been copied in Belgium with the greatest success, and a few Schulze-Delitzsch banks have been founded in Russia. As a matter of fact, all these "people's banks" bear a close resemblance to our American building and loan associations (q.v.), whose special and marked development in this country makes the United States one of the pioneer countries and chief homes of this form of coöperation.

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COOPERIA, koo-pé'ri-a. A genus of two

species of tender, bulbous plants, of the family *Amaryllidaceae*. The narrow, elongate, twisted leaves appear with the fragrant solitary flowers in summer. The flowers, which resemble those of the *Zephyranthes*, but have erect instead of versatile anthers and, unlike other members of the order, bloom at night, are 2 inches or more in diameter, usually waxy white, blushed with pink outside and green-tinted within. Those of *Cooperia pedunculata* (giant fairy flower), the most popular species, are larger, of purer color and longer duration than those of *Cooperia drummondii* (evening star), the other well-known species. The plants are of easiest culture. They do well in garden soil, and, if dug at the approach of frost and stored in dry soil, where the temperature is maintained below 50° F. but not so low as 32°, they may be kept over winter without trouble. The genus is named after Joseph Cooper, an English gardener. For illustration, see Colored Plate of *AMARYLLIDACEAE*.

COOPER RIVER. A river rising in Berkeley Co., S. C. It flows south and unites with the Ashley River, below the city of Charleston, in the estuary forming Charleston harbor (Map: South Carolina, E 4). It is navigable for 30 miles to the canal connecting it with the Santee River.

COOPER'S CREEK. An Australian river formed by the confluence of the Thomson and the Barcoo in Queensland, flowing southwest through South Australia into Lake Eyre. During the rainy season the river rises 20 feet and widens to 2 miles, while in the summer season its lower course is dry (Map: Queensland, A 10). On its banks the explorers Burke and Wills succumbed to starvation in 1861. Consult Burke and Wills, *Exploring Expedition* (Melbourne, 1861), and Wills, *Exploration* (London, 1863).

COOPERSTOWN. A village and the county seat of Otsego Co., N. Y., 35 miles (direct) southeast of Utica, on the Susquehanna River, at the outlet of Otsego Lake; and on a branch of the Delaware and Hudson Railroad (Map: New York, F 5). The village is growing in popularity as a summer resort and has a park, "Cooper Grounds," orphan house, hospital, library, and several hotels and boarding houses. Cooperstown is in a hop-growing and farming region, and contains an ice-cream and cheese factory. Cooperstown was first incorporated in 1812 and is now governed under a charter of 1889, revised in 1895. The executive holds office for a year. Pop., 1900, 2368; 1910, 2484.

The land on which Cooperstown stands was the site of an Indian town and in 1769 became the property of George Croghan, who attempted unsuccessfully to found a settlement. In 1785 it came into the possession of Judge William Cooper, who in 1786 founded a village and in 1790 moved thither with his family, including J. Fenimore Cooper, the future novelist, then an infant. The latter is buried here. Consult: Cooper, *The Chronicles of Cooperstown* (Cooperstown, 1838); Livermore, *A Condensed History of Cooperstown* (Albany, 1862); Halsey, *The Old New York Frontier* (New York, 1901).

COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART. An institution established in New York City in 1859 for the free instruction of the working classes in applied science, art, and social and political science. The Union embodies the social philoso-

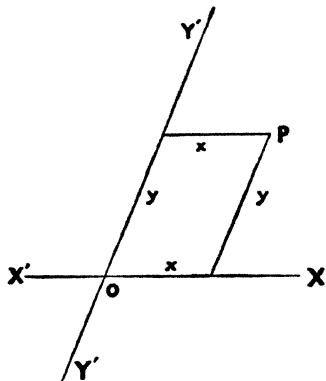
phy of its founder, Peter Cooper (q.v.), and is unique among educational institutions in the United States. Its central idea is to afford working people full opportunity, by means of day and evening classes, to obtain a mastery in art, science, and technical knowledge bearing upon industries and the engineering professions, and also, through the medium of lectures, reading rooms, and art and scientific collections, to induce a more discerning citizenship and a broader mode of living. To accomplish these purposes, Mr. Cooper erected a large building at the point where the Bowery divided into Third and Fourth avenues, and deeded both land and building, valued at \$630,000, to a self-perpetuating board of trustees. This board was to consist of not less than five nor more than six members, and upon the board was especially enjoined the establishment of regular courses of evening study; the maintenance of a library, galleries, and collections, the establishment of a school of art for women, in order that those who "might otherwise struggle through a life of poverty and suffering" should be raised to "competence and comfort"; and the establishment of a polytechnic school "equal to the best technological schools now established or hereafter to be established." By 1864 the trustees had developed this broad scheme of education so far as their funds permitted; but afterward, for many years, the union was unable through lack of endowments adequately to extend in scope and was even obliged to turn away large numbers of its constantly increasing applicants. Indeed, except for large sums given by Peter Cooper, and afterward by Edward Cooper and William Cooper, and by Mr. and Mrs. Abram S. Hewitt, the union remained practically unendowed until 1900, when Andrew Carnegie gave \$300,000 and later \$300,000 more. These sums, together with considerable gifts made by Mr. Abram S. Hewitt and others, permitted the final founding out of the original plans.

The scope of the institution now includes, besides evening courses in the various lines of drawing, modeling, and design, five-year courses in civil, mechanical, and electrical engineering and chemistry as well as courses in elocution, oratory, and debate. The day courses include a four-year Day School of Technical Science, the Woman's Art School, the School of Stenography and Typewriting for Women, and the School of Telegraphy for Women. Degrees are conferred in civil, mechanical, and electrical engineering, and in chemistry. In 1912-13 the annual budget of the Union approximated \$205,000, its income-producing endowment to about \$3,000,000, and the total value of property in its control to over \$4,000,000. In the same year 3370 pupils were enrolled in the classes, of whom 1246 were in the evening technical courses and 1187 in the night art classes. Visitors to the reading room numbered 488,000. The trustees who were originally appointed in 1859, and to whose untiring efforts the success of the Union must in large measure be ascribed, were Peter Cooper (q.v.), Daniel F. Tiemann, Wilson G. Hunt, Edward Cooper, Abram S. Hewitt, and John E. Parsons. The director in 1914 was C. R. Richards.

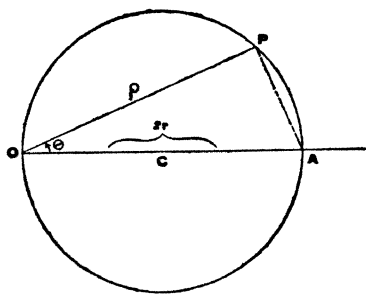
COORDINATES (from *ML. coordinare*, to coordinate, from *Lat. co-*, together + *ordinare*, to arrange, from *ordo*, order). Magnitudes which serve to determine the position of an element—point, line, or plane—relative to some fixed figure. For instance, latitude and longi-

tude are arcs (or angles) that define the position of a ship at sea relative to the equator and the prime meridian; latitude, longitude, and elevation above sea level serve to determine the position of a balloon.

The method of treating geometry analytically by use of coördinates is due chiefly to Descartes



(1637) and Fermat, although the terms "coördinate" and "axes of coördinates" were first used by Leibnitz (1694). For the explanation of rectangular coordinates as used in plane geometry, see ANALYTIC GEOMETRY. As there explained, the axes in the rectangular system are at right angles to each other, but it is often more convenient to employ a system in which the axes form oblique angles. Coordinates referred to such a system of axes are called oblique coordinates. The notation is the same as in the rectangular system, and the lines which determine a point are drawn parallel to the axes; thus the coördinates (x, y) of a point P form the outer adjacent sides of a parallelogram of which the axes form the inner sides. Another system in common use is that of polar coordinates. This involves two magnitudes—the linear distance from a fixed point and the angular distance from a fixed line. In the figure the posi-



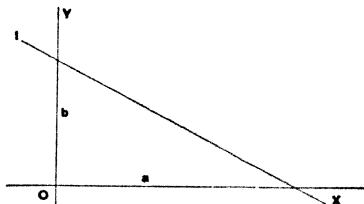
tion of point P is determined by the distance ρ from O , and the angle θ between ρ and the fixed line OA . O is called the pole and ρ the polar radius or radius vector. If OA passes through the centre C of a circle, the polar equation of the circle is $\rho = 2r \cos \theta$. That is, the values of ρ and θ , which satisfy this equa-

tion, determine points on the circle. If O is taken as the pole, the equation of the circle is evidently $\rho = r$. Rectangular coördinates may be changed to polar coördinates, and vice versa, by means of the equations

$$x = \rho \cos \theta, y = \rho \sin \theta;$$

$$\rho = \sqrt{x^2 + y^2}, \theta = \tan^{-1} \frac{y}{x}.$$

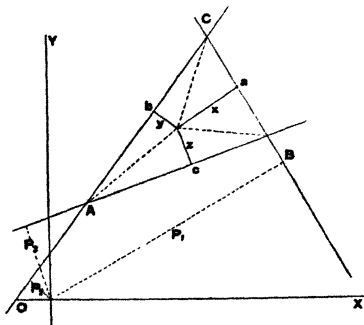
So far we have considered lines as loci of points whose coördinates satisfy given relations; but it is often more convenient to select magnitudes which determine lines passing through a given point. Thus $ux + vy + 1 = 0$ may be taken as the equation of a straight line in which u is the negative reciprocal of the intercept on the X -axis, and v the negative reciprocal of the intercept on the Y -axis. For if $y = 0, x = -\frac{1}{u}$, and if $x = 0, y = -\frac{1}{v}$. The segment a , in the figure, is the intercept on the X -axis, and corresponds to $y = 0$, and b is the intercept on the Y -axis and corresponds to $x = 0$. Therefore, $a = -\frac{1}{u}$ and $b = -\frac{1}{v}$, whence $u = -\frac{1}{a}$ and $v = -\frac{1}{b}$. If x and y are regarded as constants and u, v as variables, the equation $ux + vy + 1 = 0$ is the equation of all lines passing through the point (x, y) —i.e., of a pencil of which the point (x, y) is the vertex. Hence



this equation is called the line equation of the given point, and the system of coordinates one-point intercept coördinates. Two-point or bipunctual coördinates determine the position of an element in the plane by reference to two fixed points and a given direction. As in one-point coördinates there are two kinds, line coördinates and point coördinates, so these classes exist in two-point coördinates. Bipunctual line coördinates are the distances of a variable line taken in a constant direction from two fixed points. Bipunctual point coördinates are the negative reciprocals of the distances measured in a given direction from one of two fixed points to the line determined by the variable point and the other fixed point.

Although two magnitudes are sufficient to fix the position of a point in a plane, the introduction of a third has the advantage of rendering homogeneous certain equations involved; however, the coördinates of a single element are, in general, connected by a nonhomogeneous relation. Thus, if x, y, z in the figure represent the perpendicular distances of a point from the sides a, b, c of the triangle ABC , they are connected by the relation $ax + by + cz = k = 2 \times \text{area of } ABC$, or $x \sin A + y \sin B + z \sin C = a$ constant. (See TRIGONOMETRY.) We may also take x, y, z oblique to a, b, c , each form-

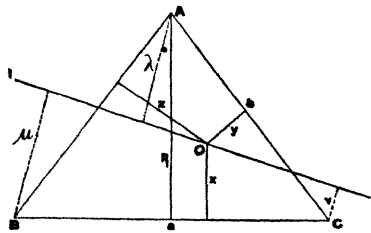
ing the same angle with its corresponding side. Equations between the coördinates of two or more points in this system are homogeneous, as $mx + py + qz = 0$, the equation of a straight line. Such coördinates are called trilinear or



homogeneous coördinates. These form a special case of barycentric coördinates, the first homogeneous coördinates in point of time, introduced by Möbius (q.v.) in his *Der barycentrische Calcul* (1827). Tetrahedral space coördinates belong to the same class. If in the above figure rectangular axes are also assumed, and if P_1, P_2, P_3 are the perpendiculars from the origin upon the sides a, b, c , respectively, then

$$\frac{x}{P_1} = \frac{BPC}{CBA}, \quad \frac{y}{P_2} = \frac{ACP}{CBA}, \quad \text{and} \quad \frac{z}{P_3} = \frac{BAP}{CBA};$$

these expressions may be designated by x', y', z' , and be employed to determine the position of point P (P denoting the point at which x, y , and z meet). Since they are expressed in terms of areas, they are called areal coördinates. In either the trilinear or areal system a point is determined if the ratios only of the coördinates are known. If $lx + my + nz = 0$ is the trilinear equation of a straight line (L in the figure), then by making x, y, z constant and l, m, n variable, the equation is called the tangential equation of the point $O(x, y, z)$. Since l, m, n are variable, the equation represents any



straight line passing through O . If λ, μ, ν are the perpendiculars from A, B, C , upon the line L , and p_1, p_2, p_3 the altitudes of the triangle ABC , the equation of the point O is

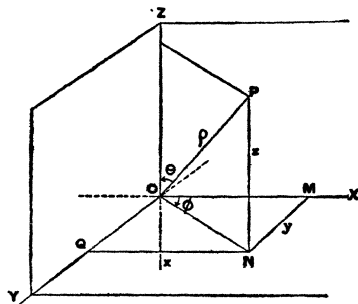
$$\frac{\lambda x}{p_1} + \frac{\mu y}{p_2} + \frac{\nu z}{p_3} = 0.$$

When the perpendiculars λ, μ, ν are taken for the coördinates of the line, the coefficients become the areal coördinates of the points referred

to the same fundamental triangle. Any homogeneous equation in l, m, n as tangential coördinates is expressed in terms of λ, μ, ν by substituting $\frac{\lambda}{p_1}, \frac{\mu}{p_2}, \frac{\nu}{p_3}$ for l, m, n , respectively.

An equation in λ, μ, ν of a degree higher than the first represents a curve such that λ, μ, ν are always the perpendiculars upon the tangent. The curve must therefore be the envelope (q.v.) of the line (λ, μ, ν) . Tangential coördinates are often called "Boothian coördinates," in honor of James Booth, who invented them. Bicircular coördinates are magnitudes which determine a point with reference to two series of circles which intersect one another at a constant angle. Generalized, Lagrangian, Eulerian, and Rodrigue's coördinates are special systems used in treating certain problems of mechanics.

From the idea of coördinates of an element in a plane we easily pass to the notion of coördinates of an element in geometry of three dimensions. The determination of a point in such space requires three coördinates. In the Cartesian system these are represented by x, y, z . An origin being taken (as O in the figure), and three axes, OX, OY, OZ mutually at right angles to one another, the point is referred to the



three planes through these axes. Here z or PN is the distance of the point above the plane YOX ; y or NM is its distance from the plane XOZ ; and x or OM is its distance from the plane ZOY . In three dimensions, as in two, the problem may be stated to be: Given the law of the motion of P , to express the law of variation of its coordinate; the algebraic expression of the latter law is the equation of the surface traced by the point in moving over all the space it can traverse consistently with the law of its motion. Thus, the equation of a sphere referred to its centre O is $x^2 + y^2 + z^2 = r^2$. As in plane geometry, if the axes are taken oblique to one another, the coördinates are called oblique coördinates. Likewise, the polar coördinates in space corresponding to the polar coördinates in a plane are ρ, θ, ϕ . In the above figure $\rho = OP$, the distance from the origin; $\theta = \angle POZ$, the angle between OP and OZ , and $\phi = \angle XON$, the angle between planes XOZ and POZ . In plane geometry there are intercept equations for straight lines, and in solid geometry there are intercept equations for planes. And as certain equations of plane geometry are made homogeneous by the introduction of a third coördinate, so in solid geometry certain equations are made homogeneous by the introduction of a fourth coördinate. Thus, in

tetrahedral or barycentric four-plane coördinates, the four faces of a tetrahedron (q.v.) of reference are taken as the coördinate planes. The equation of any plane in this system is $lx + my + nz + rw = 0$, in which

$$l: m: n: r = \frac{x_1}{p_1}: \frac{y_1}{p_1}: \frac{z_1}{p_1}: \frac{w_1}{p_1}, x_1, y_1, z_1, w_1$$

being the perpendiculars upon the plane from the vertices A, B, C, D of the tetrahedron of reference, and p_1, p_2, p_3, p_4 the altitudes of the tetrahedron from A, B, C, D respectively. For the coördinate systems for space of n -dimensions, and for the transformations from one system into another, it will be necessary to refer to special works on the subject. Consult: Carr, *Synopsis of Pure Mathematics* (London, 1886); Lamé, *Leçons sur les coordonnées curvilignes* (Paris, 1859); Möbius, "Des barycentrische Calcul" (1827), in his *Gesammelte Werke*, vol. i (Leipzig, 1885); Townsend, *Modern Geometry of the Point, Line, and Circle* (Dublin, 1863-65); Scott, *An Introductory Account of Certain Modern Ideas and Methods in Plane Geometry* (New York, 1894); Clebsch, *Vorlesungen über Geometrie* (Leipzig, 1876-91); Pascal, *Reperitorium der höheren Mathematik*, German ed. (ib., 1902); Weber and Wellstein, *Encyklopädie der Elementar-Mathematik* (2 vols., ib., 1903), both with valuable bibliographies.

COORG, kōorg, or KURG. A Province of British India, west of Mysore. Area, 1582 square miles. Pop., 1891, 173,055; 1901, 180,460; 1911, 174,976. It was a native principality of ampler dimensions before 1834, in which year it was annexed by Great Britain. Nearly the whole of the region is covered with forests, more or less dense. Its chief products are rice, coffee, lumber, and hogs. Specially notable are the ancient fortifications. The country is intersected by ramparts, which are from 15 to 25 feet in height, and by ditches of about 10 feet in depth and about 8 feet in width; while, being in some places double or triple, or even quadruple, they measure in aggregate length upward of 500 miles. Capital, Merikara.

COORNHERT, kōrn'hert, or CORNHERT, DIRK VOLCKERTSZOON (1522-90). A Dutch scholar and poet, born in Amsterdam. He lived in Haarlem from about 1542, supporting himself by his skill in engraving. In 1561 he became notary, and in 1562 secretary to the municipality also. Most active as a champion of political and religious liberty, he incurred the disapproval of the Spanish government, was imprisoned in 1567, and afterward took refuge at Cleves and Xanten. When the states threw off the Spanish yoke in 1572, he was recalled and made secretary to the States of Holland, in which capacity he rendered important services to William of Orange. He was a famous theologian, stoutly opposed the orthodox Protestant party, and by his writings aided materially in preparing the classical period of the literature of the Netherlands. His poetical works include *Abrahams uytgang* ('The Death of Abraham') and *Comedie van de blinde van Jericho* ('Comedy of the Blind Man of Jericho'). Of his works in prose, the *Zedekunst, dat is wellevens kunst* ('Ethics; that is, the Art of Right Living'), which appeared in 1586, deserves special mention. Consult Moorrees, *D. V. Coornhert de Libertijn* (1887).

COOSA (kō'sā) **RIVER**. A river formed by the confluence of the Etowah and Oostanaula

rivers in Floyd County in northwestern Georgia (Map: Alabama, C 2). It flows southwest and enters Alabama, where it flows between the hills of the southern extremity of the Appalachian Range and is joined by the Tallapoosa River to form the Alabama River. The Coosa is about 335 miles long, is navigable from its mouth to Wetumpka and from Greensport to Rome, Ga., and drains an area of 10,000 square miles.

COOS (kōos) **BAY**. An inverted V-shaped arm of the Pacific Ocean, about 10 miles long, in about lat. 43° 45' N., in Coos Co., Oreg. (Map: Oregon, A 4). On the eastern shore of its western arm (which has an average width of about one mile and runs nearly parallel to the coast) lies Empire City, a small coal-shipping port. The eastern arm expands considerably as it extends southward, and on its western shore, near its base, is Marshfield (Pop. 1910, 2980), also a coal-shipping port and manufacturing town. The bay receives the Coos River and has a depth of 14 feet of water over its bar at high tide.

COO'SHIE (native name) **ANT**. A South American leaf-cutting ant (*Ecodoma cephalotes*). See SAUBA ANT.

COOS INDIANS. See KUSAN.

COO'SY. See KUSI.

COOT (probably from Welsh *crota*, Corn. *cut*, Ir., Gael. *cutach*, bob-tailed). A kind of rail, or "mud hen" (*Fulica*), distinguished from other rails (q.v.) chiefly in having the toes edged with a scalloped membrane. Coots have a strong, straight bill, the base of which extends up the forehead and there dilates so as to form a remarkable naked patch. The color is generally dark with more or less white, and the length is about 15 inches. Coots are aquatic in their habits, preferring lakes, or pools with reedy margins, and retreating among the reeds on any alarm. The American coot (*Fulica americana*) is found breeding throughout all North America and is migratory in the north, but resident in the south. It is dark-slate color, deepening on the head and neck, and the crissum is white. The nest is a hollow heap of broken, dead reeds, the eggs (see Colored Plate of EGGS OF WATER AND GAME BIRDS) are usually about a dozen in number, clear clay color, dotted with dark brown. The young are covered with black down, striped with bright orange red. See Plate of RAILS, ETC.

The common coot (*Fulica atra*) of the Old World is found in most parts of Europe, Asia, and the north of Africa. It is about 16 inches long, black, with a narrow white bar across the wings, and the naked patch on the forehead pure white, on account of which it is often called "bald" coot. The crissum is not white, and this is the most important difference between it and its American cousin. It makes a large nest of water plants among reeds or rushes. Although not very highly esteemed for the table, the circumstance that many can be killed by a single shot, on the mud banks to which coots resort in winter, as on the south coast of England, makes coot shooting profitable to market gunners. Other species inhabit eastern Asia, Africa, and South America. The name "coot" is very often incorrectly applied in the United States to certain ducks, which are properly known as "scooters" (q.v.).

COOTE, SIR EYRE (1728-83). A British general, born at Ash Hill, County Limerick, Ireland. He joined the first regiment (thirty-ninth) sent to India and took a conspicuous

part in the capture of Calcutta. It was by his advice that Clive decided on the immediate and vigorous action which culminated in his victory over Siraj-ud-Daula at Plassey in 1757. On Jan. 22, 1760, he defeated Lally at Wandewash, destroying the power and prestige of France in India. Appointed commander in chief of the Indian forces in 1779, he began, in 1781, his celebrated campaign against Hyder Ali, whom he vanquished at Porto Novo, thus saving Madras to the English. He died on shipboard on his way from Calcutta to Madras. There is a monument to him in Westminster Abbey.

COOTE, RICHARD. See BELLAMONT.

COOTER. A name in the southern United States for the Carolina box tortoise. See TURTLE.

COPAIBA, kô-pâ'bâ (Sp. and Portug., from Brazil. *cupaiba*), or **COPAIVA**. A valuable medicinal substance, consisting chiefly of a resin (resin of copaiba) and a volatile oil (oil of copaiba), both of which are used in medicine. It flows from incisions made in the stems of trees of the genus *Copaifera*, such as *Copaifera langsdorffii* and others, natives of the tropical parts of America. Copaiba has a peculiar, not disagreeable odor, and an acrid taste. It is diuretic when taken in small doses; large doses cause gastrointestinal and renal irritation, and the administration of even a small quantity may give rise to an eruption somewhat like that of measles. It imparts a strong odor to the breath and mucous secretions. It is principally useful from its powerful stimulating and disinfectant action on the mucous membranes. It is much used in affections of the genito-urinary system, during the subacute or chronic stages, and is also employed in chronic catarrhs, etc. The medicinal dose of the balsam is from one-fourth to one fluid drachm. Balsam of copaiba is not infrequently adulterated with castor oil. The wood oil, Gurgina or Gurgun balsam of India, the produce of a species of *Dipterocarpus*, is sometimes sold as balsam of copaiba. See GURJUN BALSAM.

COPÂIS (kô-pâ'is) **LAKE.** See BÆOTIA.

COP'AL (Mex. *copalti*, resin). A resinous mineral substance of vegetable origin, chiefly used in the manufacture of varnishes and lacquers. The hardest varieties are used like amber, for making various objects. It appears in commerce in smooth rounded masses, colorless or lemon yellow, translucent or transparent, rather brittle, fusible at a somewhat elevated temperature, and but sparingly soluble in oil of turpentine. In making varnishes copal is first rendered soluble; for this purpose it is melted and, on cooling, reduced to a powder and exposed for some time to the action of atmospheric air. It is then boiled with linseed oil and oil of turpentine, and the resulting solution is filtered. Copal is dug in Zanzibar and Mozambique, at several places in western Africa, in New Caledonia, New Zealand, the East Indies, Brazil, etc. The varieties brought from Zanzibar and Mozambique are noted for their hardness and have therefore the highest market value; they are supposed to have been produced by trees like the *Trachylobium hornemannianum* and *Trachylobium mosambicense*. The copal dug in New Zealand and New Caledonia is known in commerce as *covrie* and *dammar*; it is the semi-fossil resin of the *Dammara australis* and *Dammara orata*, trees still abundantly growing in those countries; the natives of New Zealand chew the resin when freshly exuded by the trees.

Anime (q.v.) is another variety of copal; in England, however, the name "anime" is applied to all the different varieties of copal. A mineral substance resembling copal, and known as *fossil copal*, is found at Highgate, London.

COPALCHE, or **COPALCHI** (kô-pâl'chè), **BARK.** A name given to the bark of two species of *Croton*, natives of Mexico. One, the product of *Croton pseudo-china*, reaches the market in small, slender, ash-colored quills which resemble a light variety of cinchona, for which they may easily be mistaken, but have a taste and an odor, especially when burned, which suggest cascarilla (*Croton eluteria*), to which the tree is allied; the other in large quills, presumably derived from *Croton suberosus*, which is very bitter and yields an aromatic odor upon burning. The barks are credited with tonic, aromatic properties and have been used, particularly in Mexico, in intermittent fevers and in cases which seemed to demand a mild bitter. The barks have been sold for quebracho.

COPALM, kô'pâm. See LIQUIDAMBAR.

COPAN, kô-pân'. An ancient ruined city of Honduras. The buildings are of stone carved with symbolic designs. Good collections of the sculptures made by Saville and others are in the American Museum of Natural History (New York) and other American museums. The city was captured by Hernando de Chavez in 1530. See ARCHITECTURE, AMERICAN.

COPARCENARY (from co- + *parcenary*, from OF. *parcenerie*, from *parcener*, partner, from ML. *partionarius*, having a share, from Lat. *partitio*, share, from *pars*, portion). An estate in England originating in descent to two or more persons, called thence "coparceners" or "parceners." It generally arises under the rule of law which makes the daughters of one dying without male heirs inherit equally, but it may also arise by local custom, as in the case of the descent of lands held by the tenure of *gavelkind*, where all the sons inherit equally. Although the property remains unsevered, yet each parcener is entitled to a distinct share of it, and consequently there is no benefit of survivorship, but the right of each descends to his or her heirs, who are still called "coparceners" with the surviving original parceners. If one of the coparceners alienates his share, the coparcenary is destroyed, and the estate becomes a tenancy in common (q.v.). It may also be destroyed by partition, whereby the estate is divided up among the coparceners in severalty. This may be effected either voluntarily by an interchange of deeds or by an action at law. Such parts of the property as cannot be divided (such as the manor house, etc.) pass to the eldest sister or her issue, but an equivalent in value is assigned to the remaining sisters. If the estates in coparcenary are by descent reunited in one person, they become again an estate in severalty.

In the United States, where descent is to all the children or to all of a group of heirs equally, without distinction of age or sex, coparcenary was from the beginning the usual form of common ownership of land. Such descendants are now usually declared by statute to take the land as tenants in common. See COMMON, TENANCY IN; JOINT TENANCY; DESCENT.

COPE. See COSTUME, ECCLESIASTICAL.

COPE. A custom or tribute due to the crown, or lord of the soil, out of the lead mines in Derbyshire, England.

COPE, CHARLES WEST (1811-90). An English historical and genre painter, etcher, and illustrator. He was born in Leeds and studied at Sass's Art School and the Royal Academy, of which he was made a member in 1848 and a professor in 1867. He visited Paris, Munich, and Italy to make special studies of the technique of fresco painting for his series of historical fresco decorations in the houses of Parliament (London). These include "The Embarkation of the Pilgrim Fathers in 1620" and the "Burial of Charles I." His numerous oil paintings include such subjects as "The Death of Cardinal Wolsey" (Osborne Castle); genre subjects, as "Maiden Meditation," "Mother and Child" (South Kensington); "Almsgiving" (ib.); and portraits—all executed in the conventional academic style. He also contributed illustrations for *de luxe* editions of Gray's *Elegy* (1847), Goldsmith's *Poetical Works* (1845), Thomson's *Seasons*, and other works. Consult C. H. Cope, *Reminiscences of C. W. Cope* (London, 1891).

COPE, EDWARD DRINKER (1840-97). An American naturalist, born in Philadelphia. He received his earliest training in private schools and then studied anatomy at the University of Pennsylvania. From 1864 to 1867 he was professor of the natural sciences at Haverford College, Pa. On the death of Leidy, in 1891, he was made professor of geology and paleontology at the University of Pennsylvania, where he was also professor of zoology and comparative anatomy; from 1878 until his death he was editor of the *American Naturalist*. He was geologist and paleontologist of the survey of the region west of the 100th meridian under Capt. G. M. Wheeler and also of the survey of the Territories under Dr. F. V. Hayden. He was president of the American Society of Naturalists in 1895 and of the American Association for the Advancement of Science in 1896. He made an immense collection of fossils which he described in his various reports, usually published by the government. His most important contributions were to the history of extinct vertebrates. Scarcely less important were his investigations of the herpetology and ichthyology of North America. In these fields (and especially in the former) his work was epoch making and laid the foundation for the modern classification of North American reptiles, amphibians, and fishes. Cope's contributions to science number about 400. The most important are: *Systematic Arrangement of Lacertula and Ophidia* (1864); *Systematic Arrangement of Extinct Batrachia, Reptilia, and Aves of North America* (1869-70); *Systematic Relations of the Fishes* (1871); *Cretaceous Vertebrates of the West* (1877); *Tertiary Vertebrates* (1885); *The Batrachia of North America* (1889); *The Crocodilians, Lizards, and Snakes of North America* (1898). Cope was deeply interested in the questions relating to the subject of evolution. He was the leader of the school of American evolutionists, teaching Neo-Lamarckism (q.v.), which considers the changes and variations wrought in the organism by the immediate influence of environment and the inheritance of such variations by the offspring as the most important factors of organic evolution. His most important works on evolution are: *Origin of Genera* (1868); *Origin of the Fittest* (1886); *Primary Factors of Organic Evolution* (1896).

COPE, SIR JOHN (?-1760). An English

general. He was at Dettingen in 1743, but is best known through his ignominious defeat at Prestonpans (q.v.) by the Highlanders, under Charles Edward Stuart, the "Young Pretender," Sept. 21, 1745, and perhaps more widely through the sarcastic Jacobite song, based on the event, "Hey, Johnny Cope! are ye waukin' yet!" In 1732 he headed a committee which made a famous report on revenue frauds and smuggling.

COPE, THOMAS PYM (1768-1854). An American merchant. He started at Philadelphia the first line of sailing vessels between that city and Liverpool, and made a large fortune during the War of 1812 by taking all the marine risks on his vessels, which were singularly fortunate in their voyages. He was largely instrumental in introducing the Schuylkill water into Philadelphia, in the completion of the Chesapeake and Delaware Canal, the construction of the Pennsylvania Railroad, and the foundation of the Mercantile Library of Philadelphia. In 1807 he was elected to the State Legislature.

COPE, WALTER (1860-1902). An American architect, born in Philadelphia. He received his professional training in architects' offices in Philadelphia. The work of Cope includes the buildings of Bryn Mawr College, the dormitory system and other buildings of the University of Pennsylvania, several buildings of Washington University in St. Louis, and the Pennsylvania Institution for the Blind at Overbrook. Cope was a fellow of the American Institute of Architects.

COPECK (Russ. *kopeika*, *kopeika*, from *kopati*, Ochurch Slav. *kopati*, to dig). A Russian coin, the oldest kind in Russia and the first substitute for furs as a medium of exchange. It is worth one-hundredth of a silver ruble, or about half a cent.

COPEHAN. See WINTUN.

COPELAND, EDWIN BINGHAM (1873-). An American botanist, born at Monroe, Wis. He was educated at Leland Stanford Junior University and also studied at Leipzig and the universities of Halle, Wisconsin, and Chicago. Between 1897 and 1903 he was assistant professor of botany at Indiana University and at the State Normal School at Chico, Cal., assistant professor and professor at West Virginia University and instructor at Stanford. In 1903-08 he was botanist to the Philippine government; in 1908-09, superintendent of the Philippine Agricultural School; and in 1909 he became dean of the College of Agriculture, University of the Philippines. His publications include some 70 articles on botanical research and also *Elements of Philippine Agriculture* (1908) and *Cocoanut Cultivation* (1912).

COPENHAGEN (Dan. *København*, Merchants' Haven, from *kobe*, Ger. *kaufen*, to buy + *harn*, Ger. *Hafen*, haven). The capital and largest city of Denmark, situated on the islands of Seeland and Amager, in lat. 55° 41' N., and long. 12° 35' E. (Map: Denmark, F 3). The *Kalvebod*, or *Kallebo*, Strand, an inlet of the sound separating the two islands of Seeland and Amager, forms the excellent harbor of the city.

Copenhagen is divided into six parts, of which that lying within the former fortifications (now converted into boulevards) forms the nucleus of the city. The quarter situated on the island of Amager is called Christianshavn. The centre of the city is marked by the Kongens Nytorv (New King's Market Place), an irregular square with an equestrian statue of Christian V. From this square issue the principal streets, the finest

of which is Bredgade, leading to the esplanade of the citadel. The beautiful national theatre (the Royal, built 1874) and some of the more important commercial buildings are on this square. The most interesting of the numerous churches of Copenhagen are the Vor Frue Kirke, the metropolitan cathedral, famous for its statues of Christ and the Twelve Apostles, of a kneeling angel holding a shell for a font, and of other figures, designed and partly executed by Thorwaldsen; the Holmens Kirke, built in the seventeenth century, and containing monuments to the naval heroes, Juel and Tordenskjöld; Trinitatis Kirke, with a high round tower; the Vor Frelzers Kirke ('Church of Our Redeemer'), with an external winding staircase leading to the tower; and the handsome Frederiks Kirke, begun in 1749 and completed in 1894, whose magnificent dome is one of the most conspicuous objects of the city. Christiansborg, the king's residence and a noted palace (built 1731-45), was destroyed by fire (1794), rebuilt, and again burned in 1884. The royal abode was then removed to Amalienborg Plads, a group of four palaces built in the style of Louis XV. The Rosenborg Palace, built at the beginning of the seventeenth century, contains a remarkable collection of jewels, weapons, and regalia. The Palace of Charlottenborg (built 1672), situated on the Kongens Nytorv, is now the seat of the Royal Academy of Arts. Other notable public buildings are the exchange, erected in 1619-40 in the Dutch Renaissance style; the university; the new city hall; the Glyptothek, containing one of the choicest collections of sculpture and other objects of art in northern Europe; and the new Art Museum, with the Royal Picture Gallery, which ranks high among the minor collections of paintings, including choice specimens of the Dutch and Italian schools, and by modern Danish masters. The Moltke Palace contains a collection of Dutch paintings. The world-renowned Thorwaldsen Museum (built 1839-48) contains about 300 of the sculptor's works, together with furniture and art objects bequeathed by him to his native city. Within the central court is Thorwaldsen's tomb.

The University of Copenhagen (q.v.) occupies a distinguished place among European institutions of learning. Other prominent educational institutions are the polytechnic institute affiliated with the university, the veterinary school, founded in 1773, the military and naval schools, and the Academy of Arts. Copenhagen has a number of scientific and art associations, the most prominent of which are the Danish Royal Society, founded in 1742, and the Royal Northern Antiquarian Society, founded in 1825. The Royal Library contains about 600,000 volumes and about 20,000 manuscripts; and the National Museum, contained in the Prinsens Palace, includes the Danish, the ethnographical, the antique, and the numismatic collections.

The city is administered by a board of magistrates, including the president, appointed by the King, and a municipal council of 42 members.

The chief manufactures of Copenhagen include sugar, machinery, textiles, and porcelain ware. Shipbuilding is the principal industry. Over one-half of the commerce of Denmark passes through Copenhagen, and the chief financial institutions of the country are situated here. There is regular steam communication between Copenhagen and ports of Germany, Russia, England, France, and the United States. It is the seat of a United

States consul general. The area of the city with suburbs is 31 square miles (Copenhagen 28, Frederiksberg 3); pop., 1911, 559,398 (Copenhagen 462,161, Frederiksberg 97,237); 1906, 514,134 (Copenhagen 426,540); 1901, 454,466 (378,235); 1880, 261,360 (234,850); 1860, 163,307 (155,143); 1840, 120,819; 1769, 80,000.

Copenhagen was a fishing village until the middle of the twelfth century; it began to grow in importance after coming into the possession of Bishop Absalon, who fortified it in 1167. Owing to its good harbor, Copenhagen soon became a place of commercial importance and received from the Bishop of Roskilde municipal rights about the middle of the thirteenth century. It was repeatedly attacked by the Hanseatic towns. It was chosen for the capital of the kingdom in 1443 by King Christopher, the Bavarian. During 1658-59 it withstood a severe siege by the Swedes under Charles X, by its resistance probably saving the Danish monarchy. In 1700 it was bombarded by the united fleets of England, Holland, and Sweden. It suffered heavily from conflagrations during the eighteenth century. In 1801 the harbor of Copenhagen was the scene of the destruction of the Danish fleet by Nelson, and in 1807 the city was subjected to a bombardment by the British, during which the university and a number of public buildings were destroyed. Consult *Copenhagen, the Capital of Denmark* (Copenhagen, 1898); Seelig, *Führer durch Kopenhagen* (Hamburg, 1895); Nielsen, *Kjøbenhavns Historie og Beskrivelse* (6 vols., Copenhagen, 1877-92).

COPENHAGEN, UNIVERSITY OF. The only university in Denmark, and the oldest and one of the most famous in northern Europe. It was founded by Christian I in 1478, taking its statutes as well as some of its teachers from the University of Cologne, which up to that time had been the chief resort of Danish students. This first foundation perished during the civil wars accompanying the Reformation, but was reestablished in 1539 by Christian III, as a Protestant university, on the model of Wittenberg, then at the zenith of its influence. This foundation, destroyed by fire in 1728, was reestablished in 1732 by Christian VI and reorganized on its present basis in 1788. Among the distinguished men who have shed lustre on the university are Holberg, in the first half of the eighteenth century, and Oehlenschläger, the poet, Madvig, the classical scholar, Rask, the philologist, Oersted, the physicist, and Worsaae, the archaeologist, in the first half of the nineteenth century; Høffding, the philosopher, and Brandes the literary critic, in the latter half. Supported partly by the state and partly by endowment, the university is attended by some 3000 students, has a library of 400,000 volumes, museums, an academy of surgery, and an observatory. Instruction is gratuitous, and the courses are open to both sexes. The university has five faculties. Attached to it are botanical and zoological gardens.

COPENICK, or KOPENICK, kə'pə-ník. A town in the Prussian Province of Brandenburg, situated on an island at the confluence of the Dahme and the Spree, 10 miles southeast of Berlin. It contains a royal palace built on the site of a sixteenth-century castle of the Elector Frederick William, now used as a seminary for teachers, and a seventeenth-century Rathaus. The chief manufactures include dyestuffs, saw-mill machinery, inks, glass, linoleum, starch,

sugar, chicory, and shoddy. Pop., 1900, 21,024; 1905, 27,721; 1910, 30,879. The city is mentioned in 1157 as the residence of the Slavic Prince Jacso. It was conquered by the Margrave of Brandenburg in 1240 and plundered by the Russians in 1760. Consult Graf zu Dohna, *Kurfürstliche Schlosser in der Mark Brandenburg* (Berlin, 1890).

COPEPODA (Neo-Lat. nom. pl., from Gk. κόπη, κόπη, oar + ποός, pous, foot). A large and important order of entomostracous crustaceans, characterized by having the five pairs of feet specially adapted for swimming. There are no branchial sacs on the feet, and there is never any bivalve shell. The copepods, sometimes called "water fleas," live in both salt and fresh water in swarms. Some species are parasitic on fish and sometimes do great damage in that way, but most copepods are free-swimming and feed on organic matter in the water. They thus act as scavengers and must be of great importance in keeping harbors clean. Moreover, they serve as food for many species of food fishes. Among our fresh-water species, those of the genus *Cyclops* are perhaps the best known. They are very minute, actively moving creatures. The genus *Argulus* is parasitic on carp, suckers, and other fish. They reach a considerable size, frequently half an inch in length. Consult: publications of United States Fish Commission and National Museum; Herrick and Turner, *Synopsis Entomostraca of Minnesota* (St. Paul, 1895); Calman, *The Life of Crustacea* (New York, 1911). For further information see CRUSTACEA; ENTOMOSTRACA.

COPERNICAN SYSTEM. The system which represents the sun to be at rest and the earth and planets to move round it; in other words, that which we now know, on unquestionable evidence, to be the true system of astronomy. It derives its name from Copernicus (q.v.), but, in point of fact, it may be described as being a growth to which he was only one of many contributors. The merit of having first formed the general notion of the system seems to be due to Pythagoras; Copernicus has the credit of having, after the lapse of centuries, again drawn the attention of philosophers to it and of having greatly increased the probability of its truth by his calculations and arguments; for the rest, the glory of having matured the idea belongs to Kepler, Galileo, and Newton, who, through the discovery of the law of gravitation, finally demonstrated its truth effectually. Many who have been used to reverence the name of Copernicus in connection with this system would be surprised to find, on perusing his work, *De Revolutionibus Orbium Caelestium*, how much of error, unsound reasoning, and happy conjecture combined to secure for him in all times the association of the system with his name.

De Revolutionibus Orbium Caelestium, dedicated to Pope Paul III, consists of six books, in which Copernicus undertook to demonstrate his whole system. The character of the reasoning which then passed for demonstration must be borne in mind in judging of the author's procedure in establishing his various positions. It was then thought a sufficient demonstration of a phenomenon to make a supposition, on which its occurrence would be intelligible, without attempting to bring the supposition itself, by an induction of facts, within the truth of nature; many abstract propositions, too, which would now appear to be ridiculous, were at that time

universally admitted to be of great weight in scientific arguments.

Illustrations of both of these peculiarities may be gleaned from the first of the six books of *De Revolutionibus*. It contains the following propositions: 1. The universe is spherical. This is established by such arguments as that the sphere is the most perfect figure, etc. 2. The earth is spherical; which flows from the same kind of considerations. 3. The earth and sea make one globe. 4. The motions of all the heavenly bodies must be uniform and circular, or compounded of uniform and circular motions. Here, again, we meet with singular reasons. A simple body must move in a circle, and nothing but circular motion could give periodicity to phenomena. 5. Supposing the distance of the stars to be immense, there is no reason why the earth should not have a motion round its axis as well as a motion in its orbit. 6. The sphere of the stars is immensely distant. 7 and 8. The ancients were wrong in placing the earth at the centre of the universe. The arguments under this head are as imaginary as those which they were designed to refute. The falling of a body to the earth is deduced from the assumption that it is only given to wholes to move circularly, while it is of the nature of parts, separated from their wholes, to move in straight lines. That there must be a *centrum mundi*, an entity not recognized by modern science, is admitted, the question being as to its position. 9. It is possible for the earth to have several motions. 10. Copernicus establishes the order of the planets and draws a diagram of the system much as it is now represented. It may be observed that, following the old systems, such as the Ptolemaic, he lays down a *sphere* for the fixed stars. See FIRMAMENT.

The most brilliant and valuable part of the *De Revolutionibus* is that in which he explained, for the first time, the variations of the seasons, the precession of the equinoxes, and the stations and retrogradations of the planets. In general, his explanations are correct as to the general nature of the causes of the phenomena. But Copernicus had neither mathematical nor mechanical knowledge sufficient to enable him to explain more than the mean motions of the solar system. To account for irregularities he was obliged to introduce a system of epicycles entirely resembling that of Ptolemy. (See PROLEMAIC SYSTEM.) This arose from the false notion of his time that all motions must be compounded of circular ones, with the application of which idea, and with the invention of convenient epicycles, the greater part of the *De Revolutionibus* is occupied. It may further be added, to rectify the vulgar notion regarding the relation of Copernicus to the system of the heavens, that he had no answer to offer to the mechanical objections to his system. One of the commonest objections was that against the axial motion of the earth, that it was inconsistent with the fact of bodies falling to the points of the earth directly beneath the points from which they are dropped; for this he had no answer, nor could he have, the laws of motion being not yet discovered. Consult: Wolf, *Geschichte der Astronomie* (Munich, 1877); Dreyer, *History of the Planetary Systems from Thales to Kepler* (Cambridge, 1906); also works mentioned under COPERNICUS.

COPERNICIA, kŏ'pĕr-nish'f-ā. See CARNAUBA PALM.



COPERNICUS
FROM THE PAINTING BY OTTO BRAUSEWETTER

chosen in that year to deliver the annual oration before the London Medical Association, he advanced in his lecture a new theory of electro-galvanism. His *Outlines of Pathology and Practical Medicine*, in which he especially treated of the ganglionic nerves and their functions and proposed a new and more simple classification of diseases, appeared in 1822; the *Elements of Physiology* in 1824, and *On Pestilential Cholera* in 1832. Copland's most important work was the *Dictionary of Practical Medicine* (1833-58), four closely printed volumes, to which he devoted the labor of many years.

COPLEY. A borough in Lehigh Co., Pa., 6 miles northwest of Allentown, on the Lehigh Valley and Ironton railroads, and on the Lehigh Coal and Navigation Canal. It has manufactures of silk, cement, and cigars. Pop., 1900, 1581; 1910, 2670.

COPLEY, kóp'li, JOHN SINGLETON (1737-1815). An American portrait and historical painter, along with West one of the two important masters of the early period. He was born in Boston of Irish parentage, July 3, 1737, and received instruction from his stepfather, Peter Pelham, a mezzotint engraver, in which art his first artistic efforts were made. In painting he was practically self-taught, although influenced by his older contemporaries, Blackburn and Smybert. His progress was rapid, and at 17 he was recognized in Boston as a prominent painter. In 1769 he married the daughter of a wealthy Boston merchant, purchased a stately house on Beacon Hill, and soon became the recognized painter of Boston society. After exhibiting repeatedly and successfully at the Royal Academy, in 1774, on the invitation of Benjamin West, he went to London. Through the latter's kindness he received a number of commissions for portraits, including those of Lord and Lady North and the King and Queen. The following autumn he went to Italy, spending almost a year in study, to the great improvement of his drawing. Notwithstanding his sympathy with the American Revolution he remained in London. He was elected to the Royal Academy in 1779, and through three very popular historical pictures he became one of the most celebrated English artists of his day. These were: "The Death of Lord Chatham" (1779-80), "The Death of Major Pierson" (1783), and the "Siege of Gibraltar" (1790), all in the National Gallery, London. He lived in considerable state, and his popularity continued until a few years before his death in London, Sept. 9, 1815. His son, Lord Lyndhurst, afterward became Lord Chancellor of England.

Copley's art falls into two distinct periods—an American, lasting until his removal to London, and a British period. In the former his art was somewhat primitive—faulty in line, hard in color, and stiff in pose, but the sitters were always distinguished in bearing, determined in expression, and convincing in appearance. His portraits are the most typical representations of the New England society of his day. After his study in Italy and his work in London his art approached more nearly that of contemporary British painters. His execution became less labored and his technique better, but his art is less characteristic and convincing. The principal portraits of his early period include those of John Hancock and Samuel Adams (1772), in the Boston Art Museum; Mrs. Ford, in the Boston Athenaeum; Mrs. Thomas Boylston

and several others in Memorial Hall, Harvard University, which possesses other examples of his works; Lady Wentworth and Mrs. Robert Harper, in the New York Public Library; besides others in private possession, principally in Boston. The portraits of Robert Izard and his wife (Boston Art Museum), painted in Rome, represent the transition to his later manner. In London he painted "A Youth Rescued from a Shark" (replica in the Boston Art Museum), with surprising realism; portraits of Lord Cornwallis (Corporation Art Gallery, London); the Earl of Mansfield (National Gallery, London); the Copley Family—one of his very best works—and John Quincy Adams (both in the Boston Art Museum). Among his later historical paintings was "The Offering of the Crown to Lady Jane Grey" (1808, belonging to Mr. Amory, Boston). Consult: *Amory, Domestic and Artistic Life of J. S. Copley, R.A.* (Boston, 1882); Perkins, *Sketch of the Life of Copley* (ib., 1873); Isham, *History of American Painting* (New York, 1905).

COPLEY, JOHN SINGLETON, LORD LYNDBURST (1772-1863). A British lawyer and statesman, three times Lord Chancellor of England. He was the son of J. S. Copley, R.A., and was born in Boston, Mass., May 21, 1772. While yet an infant, his father removed to England for the practice of his art. He was educated at Trinity College, Cambridge, where he was second wrangler and Smith's prizeman in 1794. In 1795-96, as a traveling bachelor and fellow of his college, he visited the United States, and in company with the French author Volney made a tour which he described in Latin letters to the vice chancellor of his university. Called to the bar at Lincoln's Inn in 1804, he chose the Midland circuit, but did not achieve financial success until 1812, when his defense of a Luddite at Nottingham established his reputation. In politics he was at first a Liberal, and long expressed sentiments hostile to the ministry of the day. He ably defended Watson and Thistlewood on their trial for high treason in 1817 and obtained their acquittal. He entered Parliament in 1818, and a year later became Solicitor-General in the Liverpool administration and was knighted. In 1824 he was promoted to the rank of Attorney-General, and held that office until 1826, when he became Master of the Rolls. When Canning was charged to form a ministry in 1827, he offered the Great Seal to Sir John Copley, who was raised to the Upper House as Baron Lyndhurst and remained Lord Chancellor from 1827 to 1830. In 1831 he became Lord Chief Baron of the Exchequer, which office he exchanged for the woolsack during the brief administration of Sir Robert Peel in 1834-35. In 1835 he led the opposition to the Melbourne ministry in the Upper House, in speeches of great power and brilliancy. Lyndhurst's orations and annual reviews of the session did much to reanimate the Conservative party, and pave the way for their return to power in 1841. He then became Lord Chancellor for the third time, and held the Great Seal until the defeat of the Peel government in 1846. After that time he took little part in home politics, but his voice was often heard on matters of foreign policy, and in denunciation of tyranny in Italy and elsewhere. He died in London, Oct. 12, 1863. Lord Lyndhurst's high attainments as a lawyer have never been questioned, and his judgments have never been excelled for clearness, method, and legal

acumen. In the House of Lords he had few equals among his contemporaries as a brilliant orator and debater. He delivered his last speech in Parliament at the age of 88 with his usual force and ability. Consult Martin, *Life of Lord Lyndhurst* (London, 1883), and Campbell's *Lives of the Chief Justices and Lives of the Chancellors*.

COPMANHURST, THE CLERK or. An alias of Friar Tuck in the Robin Hood tales. Sir Walter Scott alludes to him by this title in *Ivanhoe*.

COPPÉE, kô'pâ', FRANÇOIS EDOUARD JOACHIM (1842-1908). A French poet, dramatist, and novelist. He was born in Paris and for a time was a clerk in the government service. *Le reliquaire*, his first book of poems, appeared in 1866 and was followed by *Les intimités* (1868), and *Poèmes modernes* (1869), which marked him as a member of the Parnassian school. He first attracted notice by a one-act play, *Le passant* (1869), the first of a series of curtain raisers in which he displayed greater talent than in his formal dramas, *Le luthier de Crémone* (1876), *Severo Torelli* (1883), *Les Jacobites* (1885), and *Pour la couronne* (1895). He also wrote the play *Mme de Maintenon* (1881). His later lyric work is contained in *Les humbles* (1872), *Le cahier rouge* (1874), *L'Arrière-saison* (1890), and *Dans la prière et dans la lutte* (1901); his narrative verse in *Une idylle pendant le siège* (1875), *Olivier* (1875), *L'Épilée* (1876), *Récits et élégies* (1878), and *Vingt contes nouveaux* (1883). His prose tales of the eighties include *Fille de tristesse*, *Henriette*, *Madame Nunu*, and *Le coucher de soleil*. He told his own story in *Toute une jeunesse* (1890), and published a series of journalistic essays, *Mon franc parler* (1893-96). *Le coupable* (1897) is a novel of criminal psychology, and *La bonne souffrance* (1898) signalizes the writer's reconciliation with the Church. From 1880 to 1884 he was the dramatic critic of the well-known newspaper, *La Patrie*. He was elected to the French Academy in 1884. Coppée is an accomplished artist in the short story, and here it is the poet in him that lends these brief and finished narratives their distinctive charm. He was at first and by instinct an artist in verse, a skilled craftsman, though, perhaps, a little affected; indeed, his verse has often been characterized as poetical prose, owing to the lack of real inspiration in it and his delight in treating countless unimportant details of everyday life. After 1870 his facile suavity yielded to sterner notes in the lyric of democracy, of work, poverty, and self-denial, and of the indignant patriotism of defeat. To this succeeds the gentle idyllic vein with an occasional tragic touch. But whether in prose or verse, he continues the poet of the Parisian workman and the petty trading class. He continually harks back to his lost youth in his sweetly melancholy romances, from which much real and delightful local color and Parisian atmosphere can be gleaned. He was very aptly called *le poète des humbles*. He has happily described himself as "a man of refinement who enjoys simple people, an aristocrat who loves the masses."

Consult: Lescure, *Coppée, l'homme, la vie et l'œuvre* (Paris, 1888); Driulhet, *Un poète français: François Coppée* (ib., 1902); L'Abbé Delmont, *Trois illustres conquêtes de la foi: Coppée, Brunetière, Bourget* (1905); Ernest Gaubert, *François Coppée* (1906).

COPPÉE, HENRY (1821-95). An American

educator and author, born in Savannah, Ga. He graduated at West Point in 1845, served in the Mexican War, and was assistant professor at the Military Academy from 1850 to 1855, when he became professor of English literature and history in the University of Pennsylvania. Here he remained for 11 years, after which he was president of Lehigh University until 1875 and a professor there till his death. In 1874 he was appointed a regent of the Smithsonian Institution. Among his publications were: *Elements of Logic* (1857); *Gallery of Famous Poets* (1858); *Gallery of Distinguished Poetesses* (1860); *Grant and his Campaigns* (1866); *The Conquest of Spain by the Arab-Moors* (1881); *Elements of Rhetoric* (10th ed., 1887). He edited two volumes of the *Comte de Paris's Civil War in America* (1876).

COP'PER (symbol, Cu), a metallic element, distinguished from all other metals by its peculiar red color. The name is derived from the Latin *cuprum* (from the island of Cyprus), later *cuprum*.

Physical Characteristics. Specific gravity, (cast) 8.921, (rolled or hammered) 8.952; streak or powder, red; hardness, 2.5 to 3; heat conductivity, 89.8 (gold being taken at 100); electric conductivity, 93.08 (silver being taken at 100); melting point, 1981.5° F.; malleability and ductility, high.

Chemical Characteristics. Valency, I and II; atomic weight, 63.57; specific heat, 0.093, electrochemical equivalents, (cuprous salts) 191.2 ampere hours per pound, (cupric salts) 382.4 ampere hours per pound. Copper is easily soluble in nitric acid, aqua regia, and boiling concentrated sulphuric acid, slowly soluble in hydrochloric acid with access of air. Copper combines with oxygen to form two important oxides, cuprous oxide (Cu₂O) and cupric oxide (CuO). It combines readily with various metals forming alloys, the more important of which are bronze (copper with tin), brass (copper with zinc), and monel metal (copper with nickel). (See ALLOYS.) From acid, neutral, and alkaline solutions copper is precipitated by hydrogen sulphide and ammonium sulphide as a brownish-black precipitate, cupric sulphide (CuS). Ammonia added in excess to solutions of cupric salts produces a clear fluid of an azure-blue color. Metallic iron in contact with acid solutions is covered with a coating of metallic copper.

Production and Prices. The following table shows the world's copper production for the year 1913 as compiled by *The Engineering and Mining Journal*, New York.

THE WORLD'S COPPER PRODUCTION IN 1913

SOURCE	Metric tons
Africa	20,000
Australasia	45,300
Bolivia	5,000
Canada	34,567
Chile	40,195
Cuba	3,417
Germany	25,000
Japan	65,000
Mexico	52,815
Peru	28,715
Russia	44,000
Spain and Portugal	52,300
Other Countries	30,000
United States	567,387
Total	1,000,716

From the foregoing table it will be noted that North America supplies 64.8 per cent of the world's copper, the United States alone producing 55.7 per cent.

The production of the United States is shown by States in the annexed table, as compiled by *The Engineering and Mining Journal*:

COPPER PRODUCTION OF THE UNITED STATES
IN 1913

STATE	Pounds
Alaska	23,360,000
Arizona	401,223,786
California	32,266,435
Colorado	7,320,000
Idaho	8,594,722
Michigan	161,000,000
Montana	284,210,911
Nevada	83,829,329
New Mexico	48,710,000
Utah	148,274,658
Southern States	20,857,849
Other	9,223,891
Total	1,228,811,581

The annual average prices for New York delivery prevailing for the last 10 years are shown in the following table, as compiled by *The Engineering and Mining Journal*:

AVERAGE PRICES FOR COPPER, 1904-1913

YEAR	Electrolytic cents per lb	Standard sterling per long ton	Lake cents per lb.
1904	12 823	58 884	12 990
1905	15 590	69 465	15 699
1906	19 278	87 282	19 616
1907	20 064	87 067	20 661
1908	13 208	59 902	13 424
1909	12 982	58 732	13 335
1910	12 738	57 054	13 039
1911	12 376	55 973	12 634
1912	16 341	72 942	16 560
1913	15 269	68 335	15 686

The prices given are for three classes of copper, which may be briefly defined as follows: (1) *electrolytic* copper, or copper electrolytically refined; (2) *standard*, the London term for ordinary commercial brands; (3) *lake*, applied to the product of the Lake Superior mines (Michigan), which, because of its peculiar occurrence and treatment, is of especial value in plate and tube mills.

History. Copper and copper-alloy objects are found in the prehistoric remains of (1) Egypt, dating back to the fourth dynasty (3800 to 4700 B.C.); (2) Asia Minor, dating probably to 3000 B.C.; (3) China (2500 B.C.). The remains of the Mycenaean, Phoenician, Babylonian, and Assyrian civilizations (1800 to 500 B.C.) have yielded a variety of copper and bronze objects. It is probable that the Egyptians obtained their copper from the mines located on the Sinai Peninsula. The copper used by the Greeks and Romans was first mined on the island of Cyprus. Later, during the Roman conquests, copper was found and mined in central Europe, Spain, and Britain.

On the American continent copper was known to, and used by, the aboriginal races. No dates can, however, be applied to its first use. The Lake Superior deposits were known to the French explorers in the seventeenth century. During the eighteenth century some small shipments of

copper ores were made from the Atlantic seaboard to Europe, originating from mines in Connecticut, New Jersey, and Pennsylvania. It was not until 1844 that copper came into prominence as a mineral product of the United States. Since that date the increase in production has been phenomenal, until at present the United States is alone credited with 56 per cent of the world's production.

Mineralogy. The principal copper-bearing minerals are: native copper, cuprite, or copper oxide (Cu_2O); malachite, or green carbonate of copper ($\text{CuCO}_3 \cdot \text{Cu(OH)}_2$); azurite, or blue carbonate of copper ($2\text{CuCO}_3 \cdot \text{Cu(OH)}_2$); chalcocopyrite, or copper pyrite (CuFeS_2); bornite or peacock copper (Cu_5FeS_4); chalcocite, or copper glance (Cu_2S); chrysocolla, or silicate of copper ($\text{CuSiO}_3 \cdot 2\text{H}_2\text{O}$); tetrahydrite, a copper-antimony sulphide ($\text{Cu}_3\text{Sb}_2\text{S}_7$); enargite, a copper-arsenic sulphide (Cu_3AsS_4); and covellite, or cupric sulphide (CuS).

Geology and Mining. The origin and geological occurrence of these minerals is so varied, and so complex as to preclude any detailed description within the scope of this article. Suffice it, therefore, to briefly enumerate and describe the deposits of chief economic importance in America, which are: (1) the *native copper deposits of Lake Superior*; (2) *vein deposits*, as exemplified at Butte, Mont.; (3) *contact deposits*, as exemplified at Bisbee, Ariz.; (4) *disseminated or so-called "porphyry" deposits*, of which the Utah, Nevada, Ray, Miami, and Chino mines are examples, and (5) *pyritic deposits*, exemplified at Ducktown, Tenn., and in northern California.

1. *The Lake Superior deposits.* The valuable mineral here is native copper, occurring as a cement binding together or replacing the pebbles of a conglomerate, and as a filling in an amygdaloidal diabase. The largest producer of this district, the Calumet and Hecla mine proper, is now deriving the major portion of its ore from the amygdaloidal beds, the conglomerate ores being nearly exhausted. The average yield of copper from the ores mined and milled during recent years is from 14 to 22 pounds per ton. The handling of such low-grade ore at a profit has only been possible because of the very unusual and favorable natural conditions.

2. *The Butte deposits* consist of several series of large and numerous veins in granite. The ores, as mined latterly, yield from 40 to 70 pounds of copper per ton. The ore of the upper part of the zone of secondary enrichment has been largely exhausted, and the present output is made up mainly of ores from the lower horizons, primary chalcocite and similar minerals occurring at a depth of 2000 feet and over.

3. *The Bisbee deposits* have yielded large tonnages of exceptionally high-grade ores. The main ore bodies have been found on or near a limestone-porphry contact, the chief tonnages of former years having come from the limestone side of the contact; now, however, the lower-grade ore occurring in the porphyry is being developed with excellent results. For the year 1912 the yield in copper per ton of ore was 122 pounds.

4. *The disseminated or so-called "porphyry" deposits* consist of large areas of altered rocks carrying uniformly disseminated copper values. The yield of copper per ton of ore varies from 20 pounds, as in the case of Utah copper, which is mined by steam shovels, up to 33 pounds at

Miami, which is operated as an underground mine. Two South American deposits of this type are worthy of note: they are the Braden mine, and the property of the Chile Copper Company, both located in Chile.

5. *The pyrite deposits* consist of large masses or lenses of cupiferous pyrite occurring practically free from gangue. Deposits of this character usually yield copper values ranging from 32 pounds per ton, as in Tennessee, to 60 pounds per ton, as in northern California. Their economic importance is largely due to associated recoverable mineral values, i.e., gold, silver, and sulphur. Foreign mines of importance of this type are the Mount Lyell mine in Tasmania and the Kyshtim mine in Russia.

METALLURGY

Extracting. The methods employed in recovering copper from its ores may be divided into two general classes: (1) *mechanical methods*; (2) *chemical methods*. Ordinarily a combination of both methods is used.

1. *Mechanical or milling methods*, presuppose that in all cases the material to be treated has been crushed to a degree of fineness sufficient to liberate the particles of valuable mineral from the associated valueless material, and may be subdivided into the following methods: (a) *wet*, (b) *dry*, (c) *magnetic*, (d) *electrostatic*, and (e) *flotation*. Briefly, (a) *wet* and (b) *dry milling* separate the copper minerals from the associated barren rock (gangue) by making use of the relatively greater weight (for a like bulk) of the copper minerals as compared with the gangue. In the first case water, in the second air under pressure, is used as the working medium. (c) *Magnetic* milling is used at times when the copper minerals are mechanically associated with certain iron minerals which are susceptible to magnetic influence, and which may therefore be removed by passing the crushed ore through a magnetic field, thereby removing the iron minerals with the consequent increase in grade (copper content) of the remaining material. (d) *Electrostatic* milling makes use of the varying electrical conductivity of minerals, the crushed and dry ore being passed by gravity through a field of static electricity, with the result that each falling particle of ore is charged with electricity in a degree dependent on its mineral character, and as a result is correspondingly deflected in falling. (e) *Flotation* methods depend upon the fact that certain minerals (usually sulphides) are buoyed up by oil films or attached gas particles, while the associated non-metallic minerals are not so affected, the result being that when the crushed ore is brought in contact with oil or dilute acid solutions in proper receptacles a separation is effected. In all of the above-mentioned methods the valuable mineral is separated from the barren material, suitable mechanical means being provided to maintain and to provide for the effected separation. The valuable product is usually termed "concentrate" and is given further treatment as indicated below, while the valueless product is called "tail" or "tailings" and is discarded.

2. *Chemical methods*, adapted for treating crude ore, or, as is now more often the case, using as their base material obtained from some one of the mechanical or milling methods above described, may be subdivided into (1) *dry*

methods, or smelting, and (2) *wet, or hydro-metallurgical*.

(1) *Dry methods, or smelting*, as carried on to-day, may be subdivided according to the type of furnace employed into (a) *reverberatory smelting*, (b) *blast-furnace smelting*, and (c) *electric smelting*. In (a) *reverberatory smelting* the dimensions of the furnaces employed reach a maximum width of 20 feet by a length of 120 feet, the height being small as compared with the width. The smelting procedure is as follows: The ore, after having received a preliminary heating or roasting treatment in circular multi-hearth furnaces of the McDougall or Wedge type, is mixed with suitable fluxes (limestone, quartz, or iron ore) and charged hot on the furnace bottom and fused by extraneous heat (usually from oil burners at one end of the furnace). The products of this fusion are *slag* and *matte*, which are removed from the furnace while molten. The *matte*, which accounts for the copper of the original ore, is subsequently retreated by processes hereafter described. The waste heat from furnaces of this type is used for steam generation. (b) *Blast-furnace smelting*. The ore, either in a crude state or partially roasted as metallurgical requirements may dictate, is mixed with proper fluxes and fuel and charged into furnaces whose height is invariably greater than their width (dimensions vary, ranging in width from 36 to 60 inches, in length from 36 to 612 inches, and in height from 6 to 24 feet). These furnaces have near their bottom a varying number of air inlets (tuyeres) through which air under pressure is forced with the purpose of giving the oxygen necessary for the burning of the fuel and for the thermo-chemical reactions incidental to smelting. The products from the fusion of the charge are *slag*, *matte*, and *fumes*. The *matte* is retreated, the *fumes* may or may not be treated, for the recovery of the sulphur which they contain. (c) *Electric smelting* is still in the experimental stage, the basic idea being to do away with the use of carbonaceous fuel as a heat producer, substituting therefor heat resulting from the passage of an electric current.

The old Welsh or German methods, consisting of stage smelting in furnaces of small dimensions, are but little used at the present time.

Matte treatment.—The *matte* obtained from the above-described smelting methods consists of a copper-iron sulphide, its composition changing with conditions. Usually the range of copper contained will be from 25 to 60 per cent (in exceptional cases the *matte* may be as low as 10 per cent copper, as at Ducktown, Tenn., in which case the *matte* is given a secondary smelting in blast furnaces for the purpose of increasing its copper content). In order to eliminate the iron and sulphur contained the *matte* may be treated in (a) *reverberatory furnaces* or (b) in *converters*. (a) The *reverberatory method* of treatment, not now generally used, provided for the remelting of the roasted *matte* with the addition of silica in small reverberatory furnaces, the iron of the *matte* combining with the silica forming *slag* which is removed as formed, the resulting impure copper being subsequently refined. (b) The *converter method* of treatment, now practically universal, provides for the treatment of the molten *matte* in barrel-shaped vessels fitted with air inlets. According to the character of

the lining of these vessels they have been called *acid-lined* converters and *basic-lined* converters. The basic lining has superseded the acid and is now generally used. In both types the sulphur of the matte is eliminated by oxidation; while the iron forms a slag—in the first case with the siliceous (acid) lining of the converter, or in the second case with silica added through the mouth of the converter—and is poured off at intervals leaving the impure or so-called blister copper (analyzing 96 + per cent copper) to be finally cast as ingots or as anodes and subsequently refined.

(2) *Hydrometallurgical methods* aim at the obtaining of the copper contained in the ores under treatment in the form of an aqueous solution. Basically they are an adaptation of laboratory methods of analysis to commercial ends, and as so applied are a development of the last 50 years. The process is in general as follows:

(a) *Roasting the copper as occurring in the ores soluble*. This normally means preliminary roasting for those ores containing sulphur in combination with the copper. The roasting may be carried on with or without the addition of reagents (FeS or NaCl) and means the heating of the ore by the use of extraneous fuel to a degree of heat varying from 300° to 800° C.

(b) *Leaching*. The roasted ore is subjected in suitable vessels to the action of a dilute acid solution (the solvent). Those solvents which have had the most successful application to date are sulphuric acid, ferric sulphate, hydrochloric acid, ferric chloride.

(c) *Precipitating*. The copper solution obtained is removed from the ore pulp and subjected to either chemical or electrical treatment. Probably the most used method of precipitating (removing in solid form) copper from solutions is that employing iron (scrap iron), the copper being deposited in a finely crystalline form, the equivalent iron replacing it in the solution. Copper thus produced is naturally impure and must therefore be melted down and refined. Hydrogen sulphide has also been used as a precipitant, the copper coming down in the form of a sulphide and subsequently retreated and refined. Carbonate of lime as a precipitant has been tried, the copper being brought down as an oxide, which is further treated for the production of commercial copper.

The passage of a suitable direct electric current through a copper-bearing solution, using insoluble anodes and pure copper cathodes, causes the contained copper to be deposited in a finely crystalline form at the cathode, this cathode copper being melted and cast in salable form or subjected to refining, depending on the character of the deposit.

Refining. Copper, either as produced in the form of "blister copper" or as a product from hydrometallurgical treatment, is usually refined by either of the following methods: (1) *reverberatory* or (2) *electrolytic*. 1. The *reverberatory method* (English process) procedure is to melt the impure copper down in saucer-shaped furnaces by extraneous heat and then subject it to proper oxidizing and reducing action with the addition of small quantities of silica and iron. But a small percentage of the world's copper is now handled by this method. 2. *Electrolytic refining*, now generally used, consists of casting the impure copper in slabs, placing them in suitable tanks as anodes, using as cathodes sheets of refined copper; the tanks

being filled with a copper sulphate solution (the electrolyte) showing some free acid. The passage of a direct electric current causes copper to be deposited at the cathode with the release of a corresponding quantity of sulphuric acid which attacks the copper of the anode, thus continuously regenerating the electrolyte. This cyclic action is continued until the anodes have been consumed to a minimum of waste. The impurities in the anode not being soluble fall and collect on the tank bottom in the form of a *sludge*. This sludge contains the precious metals and receives a subsequent treatment for their separate recovery. The refined copper cathodes are removed from the tanks when built up to a convenient thickness, are washed and dried, and melted down under proper oxidizing and reducing conditions in a special form of reverberatory furnace (casting furnace), the molten copper being cast in shapes adapted for commercial uses, and analyzes approximately 99.8 + per cent copper.

Uses. Copper, because of its abundance in nature and its amenability to metallurgical treatment and consequent low cost, its high electrical and thermal conductivity, its great tensile strength and the ease with which it may be worked, is consumed in large quantities in the manufacture of electrical and mechanical apparatus, alloy metals, munitions of war, coins, shipbuilding, and in architecture and the arts.

TERMINOLOGY

Anode. Term used in the electrolytic treatment of copper to denominate that electrode or conductor by which the electric current enters into the solution or electrolyte.

Black copper (coarse copper). An impure metal normally ranging from 70 per cent to 99 per cent copper with less than 2 per cent sulphur. Usually a product resultant from the smelting of oxidized (nonsulphur-bearing) ores.

Blister copper. The final product of direct smelting of copper ores, the copper ranging from 96 per cent up.

Cathode. Used in contradistinction to anode and indicates that electrode by which the electric current leaves the solution.

Cement copper. The copper obtained by precipitating copper from solutions by the use of iron.

Concentrate. The valuable mineral product resultant from mechanical treatment of an ore.

Converting. A special form of treatment for the oxidation and reduction of matte to blister copper.

Electrolytic copper. The copper produced by electrolytic refining methods.

Flux. Any material added in smelting for the purpose of facilitating the fusion of the charge.

Head. A term used in the mechanical treatment of ores, indicating the material as delivered to the mill, prior to any treatment other than crushing.

Matte (copper metal). The valuable product resultant from smelting sulphur-bearing ores. Consisting of copper, iron, and sulphur in varying proportions.

Mill. A general term for a plant using mechanical or hydrometallurgical processes of ore treatment.

Milling. The mechanical treatment of an ore, having as its purpose the separation of the valuable from the nonvaluable minerals.

Ore. A mine product containing minerals of economic value.

Refining. The further treatment of white metal or blister copper with the purpose of producing a commercially pure copper (99.8 + per cent) and the incidental recovery of any associated precious metals.

Roasting. Subjecting ore or furnace product to heat without fusion with the object of removing or decreasing the contained sulphur.

Slag. The valueless scoria produced in smelting processes.

Smelting. The reduction of ores or concentrates in furnaces by heat and fusion.

Tail (Tailings). The waste or discarded product resulting from the mechanical treatment of an ore.

White metal. A matte containing but a relatively small amount of iron, the copper approximating 60 to 75 per cent.

Wire bar. A special form of casting suited in dimensions to the use of wire-drawing machines.

Wire-bar copper. Refined copper cast in wire bars.

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COPPER, IN SHIPBUILDING. A ship which has her bottom sheathed with sheet copper is said to be coppered, or copper-bottomed. The copper so used is in sheets measuring about 48 by 14 inches, and weighs 18 to 32 ounces per square foot. The copper is always applied over wood, to which it is nailed, at ordinary draft the line of the copper is usually well above water. It seems to keep the bottom free of serious marine growth, which readily attaches itself to wood and less readily to iron. Coppering checks the formation of marine growth in two ways—as a germicide (the carbonate of copper formed is a deadly poison to animal and vegetable life) and by exfoliation, the film of copper salt peeling off quite readily, carrying with it the attached growths. When cheapness is more desired than strict efficiency, alloys of copper are used for sheathing. Iron and steel ships are coppered by first putting on a thickness or two of wood planking; this is to avoid galvanic action, which may be serious if the hull and copper are connected. In the United States navy very few vessels have been coppered, and the Board of Construction in the Navy Department has decided against coppering except for certain small vessels for special service. A wooden ship is copper-fastened when the bolts used in her underwater body

are of copper instead of iron. Iron bolts rust rapidly when exposed to the action of salt water, particularly when merely damp, or wetted and dried alternately. This seriously reduces the strength of the ship. Copper bolts are eaten away much less rapidly.

COPPERAS (ME. *coperose*, from OF., Fr. *couperose*, from ML. *coperosa*, *cuperosa*, *cup-rosa*, from Lat. *cupri rosa*, rose of copper). The name given to the commercial ferrous sulphate and also applied to the native mineral melanterite.

COPPER BUTTERFLY. Any of several small butterflies, so called in reference to their colors. In England collectors apply the name to those of the family Lycaenidae in general. In the United States it is restricted to the closely related forms of the genus *Chrysophanus*, which, however, is found also in the Old World.

COPPER CLIFF. A town in Sudbury District, Ontario, Canada, on the Canadian Pacific Railway, 4 miles west of Sudbury. It is of recent origin, having grown into recognition since 1901. It is dependent upon the mining and smelting of copper and nickel, which abound in the district. Good fishing and hunting are to be had in the vicinity. Pop., 1911, 3082.

COPPERFIELD, DAVID. See DAVID COPPERFIELD.

COPPER GLANCE. See CHALCOCITE.

COPPERHEAD. A venomous North American snake (*Ancistrodon contortrix*) of the rattlesnake family. It may exceed 4 feet in length, and has a burnished copper-colored head, hazel-brown (sometimes golden) body, with Y-shaped dark blotches on the sides, which usually meet over the back. The belly is marked with round black spots. The tail is tapered, greenish when young, chestnut in age, and has no rattle; nor



THE COPPERHEAD.

(Top of head, and face view.)

does the snake vibrate it against the grass, "and so produce a warning sound not unlike that of the rattlesnake," as is often said, more than is the habit of all snakes when excited. Another unfounded fable is that it waits until you pass and then strikes from the rear. The truth is it is sluggish, moving about mainly at night, and by day seeks to avoid notice and will not bite unless greatly alarmed or provoked; most accidents result from picking it up or touching it with the hand in handling brush or stones in the woods or clearing swamps. Its bite is as deadly as that of any snake of its size, and the absence of rattling makes it especially dangerous. In the fall it seeks some underground den, where occasionally several have been found entangled together in dormancy; these are usually, if not always, pregnant females. When aroused in spring, it seeks swamps and wet meadows, where its food (mainly mice) is most abundant, and where the young are brought forth alive in midsummer. This snake is known from Massachusetts to the Rio Grande, especially in mountainous districts, and is still common in the

rocky hills of the Hudson and Connecticut valleys. It has many names, such as "pilot," "red-eye," "red adder," "copper-belly," and, in the South, "cotton-mouth" and "moccasin"—the last confusing it with its near relative, the true or water moccasin (q.v.). Consult Stejneger, "The Poisonous Snakes of North America," in *Annual Report of United States National Museum for 1893* (Washington, 1895), and Ditmars, *The Reptile Book* (New York, 1907). See Plate of RATTLESNAKES.

COPPERHEADS. A name given by their political opponents during the Civil War to those Northern men who, believing the conquest of the South impossible—though not necessarily sympathizing with the Southern cause—strenuously objected to the vigorous prosecution of the war by the administration. In some parts of the country the name was uniformly used as synonymous with "Democrats." The most prominent and most obnoxious of the "Copperheads" was Clement L. Vallandigham (q.v.). The name was taken from the copperhead snake, which gives no warning before it strikes. It originated in 1862 and quickly came into general use throughout the North. Another explanation of the name is that it came from the habit of the extreme opponents of the war wearing as a badge a button cut out of a copper cent on which was the head of the Goddess of Liberty.

COPPER INDIGO. A name given to the mineral covellite, especially when found in spheroidal masses of an indigo-blue color, as is the case at various localities in Thuringia and at Vesuvius. Covellite is a copper sulphate.

COPPERMINE RIVER. A river of northern Canada, so named, in common with the mountains to the west of it, from the metallic products of the vicinity. It rises in Point Lake, Mackenzie Province, and enters Coronation Gulf, in the Arctic Ocean, about lat. 68° N. and long. 116° W. (Map: Canada, G 3). The Coppermine River is not navigable, being throughout its course of over 300 miles little better than a series of falls and torrents.

COPPER NICKEL. See NICCOLITE.

COPPER-NOSED BREAM (so called from the color of the snout). The blue sunfish, or dollardee (*Lepomis pallidus*), of the Mississippi valley. See SUNFISH; and Plate of DARTERS AND SUNFISH.

COPPERPLATE ENGRAVING. See ENGRAVING.

COPPER PYRITES. See CHALCOPYRITE.

COPPER RIVER. A river of Alaska, whose source is a glacier of the same name on the northern slope of Mount Wrangell. It flows at first northward, then westward and southward to the Gulf of Alaska, into which it empties at long. 145° W.—just west of Controller Bay (Map: Alaska K 5). Excepting the mountainous region in which the stream originates, the topography of its basin reverses the usual rule, for the river's upper course, once it is fairly clear of Wrangell's slope, lies through a broad plain, while its lower course carries it through the Chugach Mountains, which extend almost down to its delta. Its length is about 300 miles, and its basin has an area of about 23,000 square miles. Its fall is about 3600 feet, or at an average of nearly 12 feet a mile. From Copper Center the fall is nearly 7 feet a mile. Its chief tributary is the Chitna, from the east. Consult Mendenhall, "Geology of the Central

Copper River Region, Alaska," in *United States Geological Survey, House Document No. 197* (Washington, 1905).

COPPERSMITH (translation of the native Philippine *tambagut*, which is imitative of the bird's cry). One of several barbets (q.v.) of India and eastward to the Philippines, which are called by the natives by names meaning "coppersmith," "ironsmith," etc., on account of their sharply accented metallic notes. A familiar species in Natal is called "tinker bird." They are gorgeously plumaged, sluggish, fruit-eating birds, very numerous and noisy, but keeping in the tops of the trees and making only short, heavy flights. The crimson-breasted coppersmith (*Megalama hamacephala*) is one of the best known and most gaudy.

COPPET, kô'pă'. A village in the Canton of Vaud, Switzerland, situated on the west bank of the Lake of Geneva, 9 miles north-northeast of Geneva (Map: Switzerland, A 2). The house in which Madame de Staël lived is still standing and contains some excellent paintings and sculpture. Watches and clocks are made in Coppet. Pop., 1900, 552; 1910, 581.

COP'PICE. See CORPSE.

COP'PINGER, JOHN JOSEPH (1834-1909). An American soldier. He was born at Queens-town, Ireland, and early joined the papal army in the struggle against King Victor Emmanuel. Afterward he came to the United States, was appointed a captain in the Fourteenth Infantry in 1861, served throughout the Civil War, being brevetted major and lieutenant colonel for services at Trevilian's Station and Cedar Creek, respectively, in 1864. In 1865 he became colonel of the Fifteenth New York Cavalry. He served in several Indian campaigns (1866-68), receiving the brevet of colonel (1868), and was promoted to be major of the Tenth Infantry (1879), lieutenant colonel of the Eighteenth Infantry (1880), colonel of the Twenty-third Infantry (1891), and brigadier general on April 25, 1895. During the Spanish-American War he was appointed major general of United States Volunteers and was placed in command of the Fourth Army Corps, stationed at Camp Wheeler, Huntsville, Ala. He was retired from active service Oct. 11, 1898.

COPPINO, kôp-pě'nô, MICHELE (1822-1901). An Italian statesman and author. He was born in Alba, Piedmont, and was educated in Turin, where he became professor of Italian literature in 1861 and rector in 1869. He was Minister of Education in the cabinets of Rattazzi (1867), Depretis, Cairoli (1876-79), and Depretis (1884-88), in which capacity he secured the passage of a law regulating compulsory elementary education. He contributed largely to the *Rivista contemporanea*.

COPRA (Hind. *khoprâ*, from Malayalam *Koppara*). The dried kernel of the coconut. It is used for the coconut oil which it yields and coconut stearin. Copra, either sun dried or kiln dried, contains 50-65 per cent of oil, while hot air dried may run as much as 74 per cent.

COPRI'NUS. See FUNGI, EDIBLE, for article, and COPROLITE.

COPROLITES (from Gk. *kôpos*, *kopros*, dung + *lithos*, *lithos*, stone). The fossil excrements of animals found at times in the Paleozoic and Mesozoic strata of the earth's crust. Their true nature was first inferred from their occurrence in the bodies of several species of

ichthyosaurus, in the region where was situated the intestinal tube. It has been since shown that they are the voidings chiefly of saurians and also of fishes. They often contain portions of scales, bone, teeth, and shells, the indigestible parts of the food on which the animals lived. Occasionally they may be found exhibiting the spiral twisting and other marks produced by the conformation of the intestinal tube, similar to what is noticed in the excrement of some living fishes, and some specimens have been erroneously described as plants. These peculiar markings obtained for them the name, when their true nature was unknown, of "larch cones" and "bezoar stones." Coprolites are found to contain a large quantity of phosphate of lime; and as this forms a valuable manure, the deposits containing them have been largely quarried, especially in England, where they are found over extensive areas in Norfolk, Essex, Cambridgeshire, and Suffolk. The coprolites are extracted by washing the earth and are then treated with sulphuric acid; which converts their lime phosphate into a soluble form.

Among the most interesting coprolites are those of spiral form from the Waverly group of Pennsylvania and elsewhere, originally described as fossil algae and problematic plants under the generic names of *Palaeozyrus*, *Spirangium*, *Spiraxis*, and now known to be the dung of ancient sharklike fish such as *Cladoseleache*. The silicified coprolites of the Lias of Hanover, Germany, have afforded great numbers of radiolarian remains which have been described by Rüst. (See *RADIOLARIA*.) Consult Mantell, *Petrifactions and their Teachings* (London, 1851), and id., *Medals of Creation* (ib., 1844).

COPROPHAGY. See BULIMIA.

COPSE, or **COPICE** (OF. *copenz*, from *coper*, Fr. *couper*, to cut, from OF. *coup*, *caup*, *cop*, *colp*, Fr. *coup*, from ML. *colpus*, blow, from Lat. *colaphus*, Gk. *κόλαφος*, *kolaphos*, buffet, from *κόλλειν*, *kolaptein*, to strike). A name given in England and elsewhere to a natural wood or plantation in which the trees are periodically cut before being allowed to attain the size of timber trees, and where new shoots are permitted to grow from their roots or stumps. Some kinds of trees do not send up new shoots; but many—as the oak, birch, chestnut, ash, elm, maple, alder, hazel, and willow—very readily do so, especially when not allowed to attain too considerable a size before being cut over. Copsewoods are sometimes planted to vary and beautify the landscape, but more generally with a view to profit, either owing to a great local demand for their produce, or to peculiarities of soil and situation. It often happens that, owing to scantiness of soil or to unfavorable subsoil, oaks and other trees, after growing vigorously for a number of years, are arrested and remain almost stationary in their growth. In such circumstances it is advantageous to cut them over early and to treat the plantation as a copse, the former vigor being again manifested in the young shoots, and the land yielding in this way a greater return to its owner. Oak and birch are much planted as copsewood, in consequence of the demand for their bark; the trees are cut over every 12 to 25 years, dependent upon the character of the soil, climate, etc. The largest pieces of the wood are used for making wheel spokes and for other purposes of timber; the

smaller portions are used for making charcoal and firewood. Ash is sometimes planted as copse, with a view to the employment of the wood for handles of implements, hurdles, hoops, etc., the wood of the ash, even when very young, being highly valued for strength and elasticity. Chestnut copses are planted in England to supply hop poles. Hazel is a very common copsewood, being in great demand for making crates, etc. Besides the cultivation of different kinds of willow or osier for basket making, in which they are cut over annually, some of the species are cultivated as copse, and cut every five, six, or seven years, for hoops, crates, etc., the species which is deemed most suitable being *Salix cuprea*. *Salix alba* is also commonly employed in copse plantations for larger willow wood. In some countries copsewood is particularly valued for the regular supply of fuel which it affords.

In cutting copsewood care is taken to dress the stumps so that water may not lodge in them and cause them to rot. The size to which the stems are allowed to attain before being cut, and the frequency of cutting, differ according to the different kinds and the uses intended. Stems more than 4 inches thick are generally cut with the saw, but smaller stems with a curved bill or axe cutting upward.

COPTIC VERSION. See BIBLE.

COPTIS (Neo-Lat., from Gk. *κόττειν*, *koptein*, to cut; referring to its divided leaves), or **GOLD-THREAD**. A genus of plants of the family Ranunculaceae. *Coptis trifoliata*, the best-known species, is a native of the north of Europe, Siberia, Greenland, Iceland, and North America. It grows in swamps and derives its popular name from the golden-yellow color of its long, threadlike rootstocks. The rootstocks are very bitter and have some reputation as a tonic. They also contain a yellow dye. The leaves of this plant have three wedge-shaped leaflets, and its leafless stems bear each a solitary, rather pretty white flower, the petal-like sepals of which have yellow bases.

COPTOS. See KOPROS.

COPTS. The name given to the Christian descendants of the ancient inhabitants of Egypt. The Arabic word *Qibt* is probably nothing but a mutilation of *Egypt* (not of *Koptos*, or *Jacobite*). The number of the Copts was estimated in 1907 at 706,322, and the total number of Christians, 881,692. They are most numerous in the towns of Upper Egypt, south of Assiut. As they usually live in towns and are rarely engaged in agriculture, they present a certain contrast to the Mohammedan peasants. They are, as a rule, of smaller stature than the latter and of a lighter complexion. Most of the Copts still wear the black coat and black or blue turban which they were forced to assume in the time of the Mohammedan persecution. They are frequently goldsmiths and money lenders, and they are also excellent clerks and accountants, although few of them attain the higher governmental positions. Their character is apt to be marked by sullenness, distrust, and avarice. Although the Arabs owed the conquest of Egypt to the assistance of the Copts, they soon began to oppress them cruelly, taxing them to the utmost, hindering their religious worship, and occasionally even branding them. These persecutions reduced the numbers of the Copts very considerably. A few of them are at present

adherents of the Roman Catholic church; still fewer of the Greek church. The majority adhere to the old National church, which originated in a schism after the rejection by the Council of Chalcedon (451 A.D.) of the Monophysitic doctrine, the Egyptians not accepting the decision of the council. A long and bitter struggle against the orthodox Byzantine government arose, lasting until this was replaced by the Arab invasion. The Coptic sect is also called Jacobite, after a prominent teacher of the fifth century. The highest ecclesiastical dignity of the Monophysitic church is the Patriarch of Alexandria, who at present, however, resides at Cairo. This patriarch is always chosen from the monks of the convent of St. Anthony. By him the metropolitan of Abyssinia is nominated. The rest of the clergy represent orders similar to those of the Roman Catholic church. They have 12 bishops. The monks and nuns were once very numerous, but they have in the course of time greatly diminished in number. The elaborate rites of the church present some rather curious features—e.g., the celebration of the Lord's Supper with unleavened bread dipped in wine, and the strict division of the sanctuary or chancel from the body of the church. The Copts practice circumcision and baptize by immersion. The feasts and fasts, which are very strictly observed, are numerous. Owing to the extreme length of the service and the absence of seats, many worshippers lean on crutches which they bring with them. The Copts are very bigoted and are especially fanatical against other Christian denominations. Of late, however, the American Presbyterian mission has worked among them with success. At Qus it converted the Coptic Bishop and his whole congregation. The Coptic language, which was spoken from the third to the sixteenth century, but has now become extinct as a vernacular, belongs to the Hamitic group of African languages. It is of great importance linguistically as being the descendant of Ancient Egyptian (see EGYPT, *Language*), although its own literature is of comparatively small importance. In character Coptic was at first almost monosyllabic, like Egyptian, but it developed at a later period into a highly agglutinate language (q.v.). The morphological side of Coptic was therefore little developed, but the phonology became the real basis of the grammatical system for variations of meaning. It gained in consequence a far greater flexibility than Egyptian had possessed, and it also enriched its vocabulary by many Greek loan words, as well as a smaller number of Latin and Persian terms. Arabic words are significantly lacking in the Coptic vocabulary. The language was divided into five principal dialects. These were the Sahidic, or Thebaic and Achmimic in Upper Egypt, the Boheiric and Memphitic in Lower Egypt, and the Fayumic, or so-called Bashmuric, spoken near Lake Menzalen in central Egypt. There were also doubtless a number of dialects of much importance of which no record has been preserved. Of the Coptic dialects the oldest is the Sahidic, whose literature dates from the period extending from the third to the seventh century, comprising annals, translations of the Bible, apocryphal and Gnostic books, legends of the saints, and the like. This oldest literature has been in great part lost, and only fragments remain. The Boheiric dialect, dating from the seventh century, con-

tains by far the greater amount of extant Coptic literature, again in the main translations from the Greek or revisions of the older Sahidic texts, as well as a few translations from the Arabic. It is this dialect which is still used in the liturgy of the Coptic church. The Fayumic dialect has only very scanty literary remains, which have been discovered lately by excavations in Egypt. The Sahidic is the most harmonious and has more Greek loan words than the Boheiric, while the Fayumic stands midway between the two. The Coptic script has 31 letters, 24 of which are Greek uncials (see UNCIAL LETTERS), while the remaining characters, for *sh* (*sh*), *f*, *h* (German *ch*), *h*, *h* (French *j*), *o* (English *ch* in *child*), and *ti*, are derived from the Egyptian demotic script. After the Mohammedan conquest of Egypt, Arabic gradually displaced Coptic, although Coptic is said to have been spoken as late as 1633 by one old man.

Consult: Kircher, *Prodromus Coptus sive Egyptiacus* (Rome, 1636); *Lingua Egyptiaca Restituta* (ib., 1643-44); Tattam, *Compendious Grammar of the Egyptian Language* (London, 1830; 2d ed., 1863); Rosellini, *Elementa Linguae Egyptiaca sive Coptica* (Rome, 1837); Peyron, *Grammatica Linguae Copticae* (Turin, 1841); Schwartze, *Koptische Grammatik* (Berlin, 1850); Uhlemann, *Lingua Coptica Grammatica* (Leipzig, 1853); Stern, *Koptische Grammatik* (ib., 1880); Loret, *Manuel de la langue égyptienne* (Paris, 1892); Steindorff, *Koptische Grammatik* (Berlin, 1894); Peyron, *Lexicon Linguae Copticae* (Turin, 1835); Tattam, *Lexicon Egyptiaco-Latinum* (Oxford, 1835). Parthey, *Vocabularium Coptico-Latinum et Latino-Copticum* (Berlin, 1844); J. Strzykowski, *Hellenistische und koptische Kunst in Alexandria* (Vienna, 1902); "Die Entstehung der koptischen Kirche," introduction to R. Haupt's *Katalog 5* (Halle, 1905).

COPULA (Lat., bond). A term employed in logic to designate the word which expresses the relation of subject and predicate in a judgment. Thus, in the sentence "Art is long," *art* is the subject concept, *long* the predicate concept, and *is* the copula. The copula is either expressed separately, as by some part of the verb "to be," as in the above sentence, or it is contained in the word expressing the predicate, as "The flower blooms," i.e., *is* blooming.

COPULATIVE (Lat. *copulativus*, from Lat. *copulare*, to join together, from *copula*, bond, from *co-*, together + *apere*, Gk. *ἄρρειν*, *haptern*, to fasten). A term applied to words and sentences that introduce something which adds to the preceding thought, in the same direction. They are sometimes for this reason called "cumulative conjunctions." The principal ones are *and* (the typical copulative conjunction), *also*, *as well as*, *likewise*, *moreover*.

Adversative, marking degrees of opposition of thought in the words and expressions connected; *as*, *but*, *however*, *nevertheless*, *only*, *still*, *yet*.

Causal, introducing a reason or cause; *as*, *consequently*, *for*, *hence*, *then*, *therefore*.

Alternative, expressing a choice between two or more things; *as*, *either*, *else*, *nor*, *neither*, *whether*.

When two conjunctions connect closely related parts of a sentence, they are called "correlatives"; *as*, *either—or*, *neither—nor*, *whether—or*. The subordinating conjunctions may also

be subdivided, the principal classes being place, time, manner, cause, comparison, purpose. See CONJUNCTION.

COPY (OF. *copie*, abundance, from Lat. *copia*, from *co-*, together + *opes*, riches). In the fine arts, a reproduction of a work, whether painting, statue, or engraving, not by the original artist. A copy made by the master himself is called a repetition or replica (in French, a *doublé*). A copy of a statue, or other piece of sculpture, taken from a mold, is not called a copy, but a *cast* (q.v.).

COPYHOLD. A species of estate in land in Ireland and England, the modern form of the ancient tenure in villenage, closely resembling in many particulars the feu rights of Scotland. Copyhold is expressed technically as "tenure by copy of court roll at the will of the lord, according to the custom of the manor." This means that it is tenure of land, being part of a manor, the title being evidenced by the court rolls of the manor, and the right of the owner being in conformity with the immemorial customs of the manor. The addition, "at the will of the lord," serves only as a memorial of the derivation of this species of estate from the estates granted in old times to the bondmen, or villeins, which estates were, in theory at least, resumable at the pleasure of the lord. But the will of the lord has from a very early period been controlled by the custom of the manor, which forms the law of the tenure; and as this custom must be immemorial, i.e., extending to the reign of Richard I, no new copyholds can be created.

The custom of each manor may vary from that of others in important particulars. In some the copyhold lands are held for life only; in some they descend according to particular rules of their own; in most, however, they descend according to the ordinary rules of inheritance of freehold estates. But the custom, whatever it may be, cannot be altered by the holder of the copyhold; he cannot, e.g., entail his land unless the custom warrants it.

One practical distinction of much importance, drawn between freehold and copyhold land, is the mode in which it must be conveyed. An ordinary conveyance is ineffectual in regard to copyhold, and indeed would operate, like other attempts to break through the custom which forms the title, as a forfeiture. The owner comes to the steward of the manor and by a symbolical delivery, according as the custom may prescribe, surrenders the land to the lord of the manor, in order that it may be granted again to such person and on such terms as are desired and as the custom authorizes. The steward, by a repetition of the symbolical delivery, transfers the copyhold to the person in question in terms of the surrender; and the transferee then pays the customary fine, or fee, and takes the oath of fealty. This is called conveyance by surrender and admittance. In the case of an heir succeeding there is no surrender, but there is admittance only upon payment of the customary fine, and it is enforced by a customary penalty. A mortgage is effected by a surrender upon condition that the money is repaid and the admittance takes place only in event of failure of payment. A copyhold may in like manner be devised by will, the devisee being admitted on the death of the deviser.

The inconveniences and loss accruing through the variety of customs to which copyhold lands

are subject led the legislature to provide for their gradual extinction. By consent of the copyhold commissioners, all the services due to the lord of the manor may be commuted for a fixed rent. The lord of every manor is also authorized to enfranchise, or convert into freehold, the copyhold lands by agreement with their owners, and either the lord or the tenant may compel enfranchisement on payment either of a fixed sum, where it is at the instance of the lord, or of an annual rent, where it is at the instance of the tenant, fixed in both cases by the commissioners. See MANOR; TENURE; SERF; and consult: Elton, *Treatise on the Law of Copyholds and Customary Tenures of Land* (2d ed., London, 1893), and Scriven, *Treatise on Copyhold, Customary Freehold, etc.* (7th ed., ib., 1896).

COPYING MACHINES AND PROCESSES. The various contrivances for procuring duplicates of manuscripts without the labor of transcribing them may be reduced to two classes. In the one, the writing or typewriting is first made and then copied; in the other, the copy and the original are produced at the same time. The essence of the first method is this: In writing the original, an ink is used that is made for the purpose, or common ink is thickened by the addition of a little sugar or glycerin. If the typewriter is used, a copying ribbon or one impregnated with such an ink is employed. When the writing is dry, a damped sheet of thin unsized or tissue paper is laid upon it, and over this a piece of oiled paper. The whole is then subjected to pressure, and the damped paper is found to have received an impression of the writing. It is of course the reverse of the original, but the thinness and transparency of the paper allows it to be read right on the other side. The machines for communicating the pressure are of various kinds. Some pass the sheets between rollers like the copperplate press; others act on the principle of the simple screw press. A simple plan is to wrap the sheets around a wooden roller of about an inch diameter, lay this upon a table, and roll it under a flat board, pressing all the while. In the second method of copying, prepared blackened or carbon paper is laid between two sheets of thin writing paper. The writing is traced firmly on the upper sheet, with a steel or agate point, or common lead pencil, and the lines are found transferred in black from the blackened sheet to the paper adjacent. By having several of these blackened leaves, a number of copies may be produced at once, so that the method can be employed in duplicating invoices, newspaper copy, and telegraph messages. The blackened paper is prepared by saturating it with a mixture of lard and lampblack. The *manifold writer* of Wedgwood, invented in 1806, was on this plan.

This is, of course, the underlying basis of obtaining carbon copies with the typewriter. A sheet of paper upon which the copy is to be made is placed next to the cylinder, and in contact with it a sheet of carbon paper. Other sheets of paper and carbon paper to the limits of the capacity of the machine and the number of copies desired follow, and finally the original sheet on which the ribbon leaves the mark of the characters when struck by the type. Press copies are being supplanted in large part by carbon copies for business and official correspondence, as the permanence and indelibility

of the ink is not so assured, and the cost of labor and material is much greater. The United States government Commission on Economy and Efficiency made recommendations to that effect in 1911.

The first suggestion for a copying press is said to have been made by Benjamin Franklin, who sanded the yet wet ink of his manuscript with emery and then passed the manuscript between rollers in contact with a soft, highly polished pewter plate. This received the impression from the emery, from which numerous copies could be made by the copperplate printing process. In 1778 James Watt adopted the simple plan of copying by pressing transparent, bibulous paper against the damp manuscript, so that the writing would be transferred as on a blotter and then read from the other side. Watt devised not only the copying process with a special ink but also a rotary and other presses.

In the *papyrograph* a specially prepared paper is used, upon which words are written with a common pen, but with a special ink. The sheet is then soaked in water, and the ink corrodes the fabric of the wet paper, leaving open lines in place of the writing. The sheet is then used as a stencil, like that prepared by the electric pen. The *mimeograph* is an apparatus invented by Thomas A. Edison, by which stencils of written pages are obtained for the purpose of producing an indefinite number of copies. It consists of a fine-pointed steel stylus, moving over the surface of a sheet of tissue paper, coated on one side with a film of sensitive material. This paper is placed on a plate of steel, known as the baseboard, upon which are cut intersecting corrugations, numbering 200 to the inch. As the stylus moves over the paper, it presses it down upon the steel plate, and the fine sharp points puncture the paper from the under side in the line of the writing. This paper, or stencil plate, is then fastened into a frame, which stretches it tight and smooth, again placed upon the baseboard with a sheet of paper between, and an ink roller of peculiar construction is passed over its surface, forcing the ink through the perforations upon the paper beneath, thus making a print. The patent for this instrument was applied for in 1878, and there have been numerous improvements since, the apparatus being used extensively in connection with the typewriter, where the stencil is made by the type bars striking a sheet of paper laid against a piece of gauze, the resulting effect being exactly the same as described above. Various mechanical devices for printing from stencils thus prepared are available.

A familiar form of copying device uses a gelatin surface against which a manuscript written with a special ink is pressed. The ink is absorbed by the surface, and a number of copies may be secured by simply placing fresh sheets against the surface.

In making copies of insurance policies and other documents where exact reproduction is desired, it is now customary to use a special form of camera and sensitized paper, making a direct photograph, but reversed, in that white is black, which is available for filing.

In connection with the typewriter there are many different devices for producing a greater or less number of facsimile letters or circulars, but in the main they all depend upon one or another of the principles mentioned above, unless they make use of some form of movable

type. For making copies simultaneously and at distant points a mechanical and electrical device known as the *telaautograph* is available, but this is used more for the transmission of intelligence than to provide an exact copy.

The *Blue-Print Process* is peculiarly adapted to the reproduction of drawings and plans, and is used by architects, engineers, and mechanics. Two solutions are prepared: the first contains one part of citrate of iron in four parts of pure water; the second contains one part of red prussiate of potash in six parts of water. When ready for use, equal parts of the solutions may be mixed in a shallow dish and applied to sheets of paper with a sponge or a camel's-hair brush. Any paper will serve, but that is best which has but little sizing. The solution should be applied and the paper should be dried and kept in the dark. The solutions themselves will keep, separately, in the dark as long as desired, but if mixed soon begin to deteriorate. The drawing or writing to be copied should be made with very black ink, upon thin paper or tracing cloth. A photographer's printing frame, with a plain glass and a back easily removed, is used in the following manner: Place the drawing face down upon the glass, the prepared paper with its face against the back of the drawing; put the movable back in place, reverse the frame, and expose to light. In direct sunshine 2 to 7 minutes will be long enough, the time to be ascertained by trial: in diffused light, the exposure must be 5 to 10 times as long. After exposure the print should be immediately washed in clear water; when the chemicals are removed, the sheet is fastened by its corners to a line to dry, and the surface may afterward be finished by a hot iron or by pressure. A little practice is needed to secure the best results, and in a good print the lines will be clear white, and the background a deep blue. A light blue background indicates a weak solution, or insufficient exposure, overexposure is shown by a grayish tint. Clear, quick sunshine will give sharper lines than can be obtained by slow, diffused light, but in large blue-printing establishments electric lights and special machines are employed. The chemical change is evident: the light causes a reaction between the prussiate of potash and the iron, of which Prussian blue is the product; this occurs wherever the light has not been intercepted by the black lines of the drawing, which therefore appear in white upon an intensely blue and unfading background. Copies may be multiplied at will from negatives on glass or films, from engravings in books, from drawings, or from manuscripts.

Black Prints on a white ground may be made in the same general way, by using the proper solution in preparing the paper, of which there are now numerous varieties sold ready for use, while the rapid making of blue and other prints from tracings, especially those of large size, is an important industry in large cities where there are many architects and engineers.

COPYRIGHT. The exclusive right of reproducing, by writing, printing, or otherwise, the language and form of a literary or artistic production and of publishing and vending the same. In this broad sense the right is wholly modern, being based upon a series of statutes, beginning with 8 Anne, c. 19, in England, and with the first Federal Copyright Act passed by the Congress of the United States in 1790. Copyright in published works exists in Eng-

land-to-day by virtue of the Copyright Act of 5 and 6 Vict., c. 45 (1842). With this must, however, be considered the following amendments: 1844, international provisions; 1847, Colonial act; 1850, designs and sculpture; 1852, international and engravings; 1862, fine arts; 1875, international, for dramatic works; 1875, Canada; 1882, musical compositions; 1886, international; 1887, order in council (confirming the Bern convention); and 1888 and 1902, musical compositions. In the United States the matter is one for national and not for State regulation, the power "to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries" being vested in Congress by Art. I, Sec. 8, of the Constitution. The only effective restriction which this clause places upon the power of Congress to legislate concerning copyrights is the virtual prohibition of the grant of a perpetual right of this character. The apparent limitation of the power to a copyright for "writings" only has been removed by judicial construction, the term "writings" having been held to include maps, charts, music, prints, engravings, drawings, paintings, and photographs, as well as books, written and printed articles, and the like. The power to protect the author of a book in the right to dramatize the same, and the author of a dramatic composition in the right of publicly performing or representing it, is included within the constitutional provision. But it is not clear whether the protection afforded by the copyright law to sculptors places them in the category of authors of writings or of inventors or designers. However this may be, there is no dispute as to the authority of Congress to enact general copyright legislation. The law in force prior to 1909 is to be found in U. S. Rev. Stat., Tit. 60, c. 3. An important modification of this act is the enactment of March, 1891, introducing international provisions. Further amendments are 1893, deposit of copies; 1895, limitation of penalty for art infringements; 1897, additional penalty for dramatic infringements; 1897, instituting the register of copyrights; 1897, penalty for fraudulent notice. Under the Act of 1870 the supervision of the business of copyrights is placed under the control of the Librarian of Congress. Under the Act of 1897 the office of Register of Copyrights was created. The details of the copyright business are managed by the Register, who remains, however, subject to the general supervision of the Librarian of Congress. The statute provides that two copies of the work copyrighted, printed from type set within the limits of the United States (except in the case of musical compositions), shall be deposited in the office of the Librarian of Congress not later than the day of publication of the work in this or any foreign country, except that where the original publication was in a foreign language the amendment of 1905 prevents printing in the United States for 12 months thereafter. This discrimination against Great Britain has been strongly criticized in that country. The original jurisdiction of all suits under the copyright laws rests with the United States circuit courts. Under the interpretation of these courts copyright in published works exists only by virtue of the statute.

The terms of these acts are very similar to those of the English law and provide that the

author, inventor, designer, or proprietor of any book, map, chart, dramatic or musical composition, engraving, cut, print, or photograph, or negative thereof, or of a painting, drawing, chromo, statue, statuary, etc., being a citizen of the United States or a resident therein, or a citizen of any State which grants reciprocal privileges to citizens of the United States, may secure the sole liberty of printing, reprinting, publishing, copying, executing, and vending them for the term of 28 years, which period may, on the application of the author or inventor, or, if he be dead, of his widow or children, be extended to a further period of 28 years. The time limit of the first American act is that specified (for books thereafter printed) in the English Statute of 1709, and was originally adopted by analogy from the Statute of Monopolies (21 Jac. I, c. 3).

In order to make clear the claim of a work to copyright, it is necessary that it should be original, but the originality can exist in the form or in the arrangement as well as in the substance. Corrections and additions to an old work (itself not the property of the compiler) can also secure copyright. The copyright of private letters constituting literary compositions is in the composer, not in the receiver. As to the right of property in lectures, whether written or oral, the American courts have followed the English precedents.

It is to be borne in mind that what is thus protected by law, and thus erected into a species of property, is not the ideas, sentiments, and conceptions of the author, artist, or designer, but the substantial form in which he has embodied them. There is no property in thoughts and feelings, and there can therefore, in the legal sense of the term, be no theft or piracy of ideas. It is the literary or artistic creation, i. e., the form, which is protected, and not the substance. Hence ideas, whether expressed in conversation, or in lectures, or in copyrighted books, immediately become common property and may be employed by any one who will clothe them in a new and different form from that in which they were communicated to him. But the new form must be substantially different from that of the copyrighted matter. It must not be merely a disguised copy or reproduction of the original, for the law protects the arrangement of the matter as well as the language in which it is conveyed. On the other hand, as it is the financial and proprietary interest, and not the pride, of the author which the copyright law seeks to protect, it is no infringement of his rights to make a fair and reasonable use of a book by way of quotation or otherwise, whether for purposes of criticism or for the private use of the reader. Thus it has been held that "extracts and quotations fairly made, and not furnishing a substitute for the book itself, or operating to the injury of the author, are allowable." Furthermore, as the law is aimed at reproducing a work by printing, publishing, dramatizing, or translating any copy thereof, it is conceived that it is no infringement of the author's copyright to read in public a printed poem or other literary production, though of course it cannot be reprinted in a newspaper or magazine, even as an item of news, without permission. It has, however, been held by the English courts that the presentation, through reading or through singing, of a copyrighted work to a public which makes payment for the privilege, constitutes an infringement.

It is not necessary that matter shall be literary or artistic in form, nor even that it shall be original in substance, to be entitled to copyright. A translation or dramatization of another's work may be so protected, and so may be an abstract or newspaper report of a speech, a judicial opinion, or a debate. The law extends equally to compilations of the writings of others, to dictionaries, gazetteers, road and guide books, directories, calendars, catalogues, mathematical tables, and the like, the arrangement of the material being protected even though the matter of which it is composed is common property.

There is in the United States no general principle of law conferring the copyright on all published works, nor does it arise in favor of an author merely by virtue of his authorship. It is a peculiar privilege, which can be had for the asking, but which is not conferred on those who do not seek it. It is still possible for an author or an artist to dedicate the productions of his genius to the public. Having once done this by publishing his work, he is precluded from setting up an exclusive title to it thereafter. In other words, the steps requisite to secure copyright of any work entitled thereto must be taken in advance of publication. The process of obtaining a copyright is very simple, consisting only in the deposit in the Library of Congress at Washington, not later than the day of its publication in this or any other country, of a copy of the title-page and two copies of the book or other work to be copyrighted, and printing on the book or other work and on all reproductions thereof a notice that the copyright has been secured, together with the date thereof. In Great Britain, on the other hand, copyright attaches, without previous application therefor, in favor of all books, etc., first published in the United Kingdom. The right does not exist and cannot be acquired in favor of works previously published elsewhere. The English statute provides for registration at Stationers' Hall, not as a prerequisite to the existence of copyright, but as a preliminary to a suit for its infringement.

As already stated, copyright is a matter of only national and local concern. The granting of copyright by one nation to the productions of citizens of another has resulted as a slow development from influences that first began to have effect about the beginning of the nineteenth century. (For a historical treatment of this, see LITERARY PROPERTY.) At the present time many of the leading states of Europe have granted international copyright, mostly under specific conditions of time or place of publication. In Great Britain, the copyright law now in force is in substance that of 5 and 6 Vict., c. 45. The international provisions are contained in the Acts of 1844, 1852, 1875, 1886, and the order in council of 1887, confirming the Bern convention. The decision given in June, 1891, by the law officers of the crown that citizens of the United States could secure copyright throughout the territory of the British Empire by compliance with the provisions of the British statute, enabled President Harrison to include Great Britain in the proclamation of July 1, 1891, in the list of states the citizens of which could secure copyright in the United States under the Act of March, 1891. The term is for the life of the author and seven years, or for 42 years from the date of first publication, whichever may be the longer. The law provides that a copy of the first and of each subsequent edition

of every book must be sent, on demand, to the following libraries: The British Museum in London, the Bodleian in Oxford, the University Library in Cambridge, the Library of the Faculty of Advocates in Edinburgh, and the Library of Trinity College in Dublin.

The term for art copyright is fixed, under the Act of 38 Geo. III, at 28 years. Copyright in a dramatic production is protected for the same term, of 42 years (or for the life of the author and seven years), as that accorded to a work of literature. The copyright in letters vests in the writer, except in so far as any particular circumstance may give to the person to whom the letter is addressed, or to his representatives, a right to publish the same. The perpetual copyright of the authorized versions of the Bible and of the Book of Common Prayer (and possibly, adds Stephen, in the text of acts of Parliament) is vested in the crown. A perpetual copyright in books first issued by the following institutions (unless such books came into the control of the institutions for but a limited term) is vested in the universities of Oxford, Cambridge, Edinburgh, Glasgow, St. Andrews, and Aberdeen, and also in each college of the universities of Oxford and Cambridge, in Trinity College, Dublin, and in the colleges of Eton, Westminster, and Winchester. The book of registry of copyrights is kept at Stationers' Hall. There is no obligation to make registration, excepting that such entry must be made before the owner of the copyright is in a position to take action in regard to any alleged infringement. A bill for the reshaping of the British copyright act, known as the Monkswell Bill, was reported to the House of Lords by committee in 1900 but was not passed. It was originally introduced in November, 1886, at the instance of the British Society of Authors. It was reintroduced, with some material modifications, in 1900. Under this bill the term of copyright is extended to the life of the author and 30 years.

The provisions controlling copyright in Germany, including Alsace-Lorraine, date from 1871. The Statute of June 19, 1901, now in force, made no material changes in the conditions of copyright, but instituted detailed regulations for the relations of authors and publishers, covering the *Verlagsrecht*. There are also Acts of Jan. 9, 1876, for sculpture, and Jan. 10, 1876, for photographs. The copyright relations with the United States are defined in the convention of Jan. 15, 1892. The term is for the life of the author and for 30 years thereafter. Copyright registry for the Empire is kept in Leipzig. The protection of the law is afforded to the works of German citizens, whether published inside or outside of the Empire. Under this same law the works of aliens receive protection provided that they are published by a firm doing business within the Empire. In Italy literary copyright rests upon the Statute of September, 1882. The term is for the life of the author and for 40 years after his death, or for 80 years from the publication of the work. In Austria the term of literary copyright is 30 years after the author's death. In Belgium copyright (formerly perpetual) is now limited, under the Law of 1886, to the life of the author and 50 years thereafter. In Holland, under the Law of 1881, the term is for 50 years from the date of publication. In Hungary the term is the life of the author and 50 years. In Japan, under the Law

of March 3, 1890, the term is the life of the author and 30 years. In Russia the term is for the life of the author and 50 years. In Spain, under the Act of 1879, the term is for the life of the author and 80 years.

In 1909 the law in the United States relating to copyright underwent a thorough redrafting and rearrangement, resulting in considerable modification of the text. For important changes, see UNITED STATES COPYRIGHT ACT. Consult: Copinger, *Law of Copyright* (4th ed., London, 1904); Drone, *Treatise on the Laws of Property in Intellectual Productions* (Boston, 1879); McGillivray, *The Law of Copyright* (London and New York, 1902); Briggs, *The Law of International Copyright* (London, 1906); Hamlin, *Copyright Cases* (New York, 1904); Solberg, *Copyright in Congress, 1779-1904* (Washington, 1905).

COQUELIN, kô'klan', BENOÎT CONSTANT (1841-1909). A distinguished French actor, known as Coquelin Aîné, to differentiate him from his younger brother, Coquelin Cadet. Born at Boulogne-sur-Mer, Jan. 23, 1841, he early showed such dramatic gifts that he was sent to the Paris Conservatoire (1859). The following year he took the second prize for comedy and made his début on the stage of the Comédie Française in *Le dépit amoureux*. Later he appeared with brilliant success in *Le mariage de Figaro*, *Le malade imaginaire*, *Le misanthrope*, *Le barbier de Séville*, and other pieces in the classic repertoire. In modern plays he was no less effective, and he speedily became the leading comic actor of his time. Among his creations have been rôles in *Le lion amoureux*, *Gringoire*, *Tabarin*, *Paul Forestier*, *L'étrangère*, *Les faux ménages*, *Le monde ou l'on s'ennuie*, and *Denise*, to mention only a few. He was elected a *sociétaire* in the Théâtre Français in 1864, but in 1886 he retired and made an extensive tour abroad, visiting America in 1888. At the end of 1889 he returned to the Théâtre Français, where, as a salaried member of the company, he remained till 1892, creating among other parts that of Labussière in *Thermidor* (January, 1891). In 1893-94 he appeared again in the United States. His engagement in 1895 at the Renaissance Theatre in Paris led to a lawsuit from the Comédie Française, in which he was condemned to pay damages. In 1897, at the Porte-Saint-Martin, he produced Rostand's *Cyrano de Bergerac*, which became his most celebrated character. In 1899 came his Napoleon in *Plus que reine*. In 1900-01 he visited America once more, this time in company with Sarah Bernhardt, to whose Duc de Reichstadt he played Flambeau in Rostand's *L'Aiglon*. Coquelin was abundantly endowed for the stage. He had a trim figure and expressive face. The large tip-tilted nose was a partial disqualification for tragedy, but an advantage in comedy. His eye was alert and penetrating, his voice naturally deep and resonant, but it could be exquisitely modulated to express varying moods. He lacked Fechter's fervor in love-making scenes, but he had a simplicity and directness that was more appealing; and in his versatility and the mastery of the technique of his art he was without a rival among his contemporaries. He entered into the soul of the character he was portraying and divested himself of every attribute that was not in harmony with it. Each of his characters was a new being, differing in thought and action from the others. Coquelin was known also as a writer and lecturer. Among

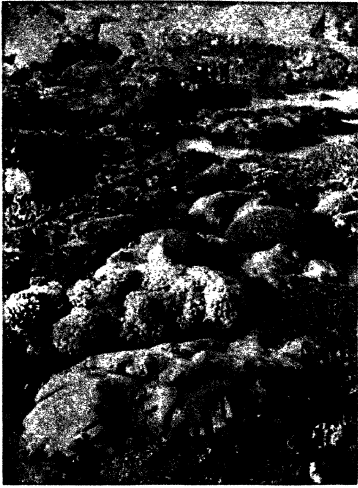
his publications are: *L'art et le comédien* (1880), which is known in English as "The Actor and his Art"; *Les comédiens par un comédien* (1882); *L'Arnolphe de Molière* (1882); and, in collaboration with his brother, Coquelin Cadet, *L'art de dire le monologue* (1884). Consult, for biographical matter, E. Zabel, "Coquelin im Berliner Schauspielhaus" in *Zur modernen Dramaturgie*, vol. iii (Oldenburg, 1903); for criticism, Edmondo de Amicis, "L'attore Coquelin," in *Ritratti letterari* (3d ed., Milan, 1881).

COQUELIN, ERNEST ALEXANDRE HONORÉ (1848-1909). A French actor, known as "Coquelin Cadet," to distinguish him from his more famous elder brother, Constant Coquelin. He was born May 16, 1848, at Boulogne-sur-Mer, and in youth was for a time in the employ of the Northern Railway, but went, in 1864, to Paris to enter the Conservatoire and make a career upon the stage. He was graduated three years later with the first prize in comedy and made his début at the Odéon. In 1868 he appeared with his brother at the Théâtre Français, and he continued there till 1875, playing in *Les plaisieurs*, *Le barbier de Séville*, *Les femmes savantes*, *Le mariage de Figaro*, *L'Avaré*, and other well-known pieces. In 1875 he went to the Variétés, but returned to the Comédie Française in the following year, and in 1879 he became a member of the company. Among the principal plays in which he created parts are: *Le sphinx*, *L'ami Fritz*, *Les corbeaux*, *Denise*, and *L'Héritière*. M. Coquelin Cadet owed much of his reputation to the success of the numerous monologues of which he was the author, and in the rendering of which he gained great popularity in the salons of Paris. He wrote also, under the pseudonym of Pirouette, *Le livre des convalescents* (1880), *Le monologue moderne* (1881), *Fariboles* (1882), *Le rire* (1887), *Pirouettes* (1888), and other humorous volumes.

COQUELIN, JEAN (1865-). A French actor, son of Constant Coquelin (q.v.). He studied under his father and in 1890-92 was engaged at the Théâtre Français. In 1897 at the Porte-Saint-Martin he created the rôle of Ragueneau in *Cyrano de Bergerac*. He has also played Lubin in *Thermidor*, Verdet in *Le gendre de M. Poirier*, and Talleyrand in *Plus que reine* (1899).

COQUEREL, kô'krèl', ATHANASE LAURENT CHARLES (1795-1868). A French Protestant theologian. He was born in Paris and studied theology at Montauban. In 1818 he became pastor of the French church in Amsterdam and in 1830 was induced by Cuvier to return to Paris, where he won high reputation as a pulpit orator. An earnest opponent of the doctrine of predestination, he drew upon himself the violent attacks of the orthodox Calvinists and propagated his opinions in three periodicals founded by him. He was elected a member of the Constituent Assembly in 1848 and later also of the Legislative Assembly. Among his writings may be mentioned a reply (1841) to Strauss's life of Jesus, which was translated into English (1844); *Biographie sacrée* (1825-28); *L'Orthodoxie moderne* (1842); *Christologie* (1858). His son ATHANASE JOSUE (1820-75) was a pulpit orator and was prominent as the leader of liberal Protestantism in France. He wrote *Libres études* (1867); *Des Beaux-Arts en Italie* (1857; Eng. trans. by E. and E. Higginson, 1859); and *Jean Calas et sa famille* (1858). Consult

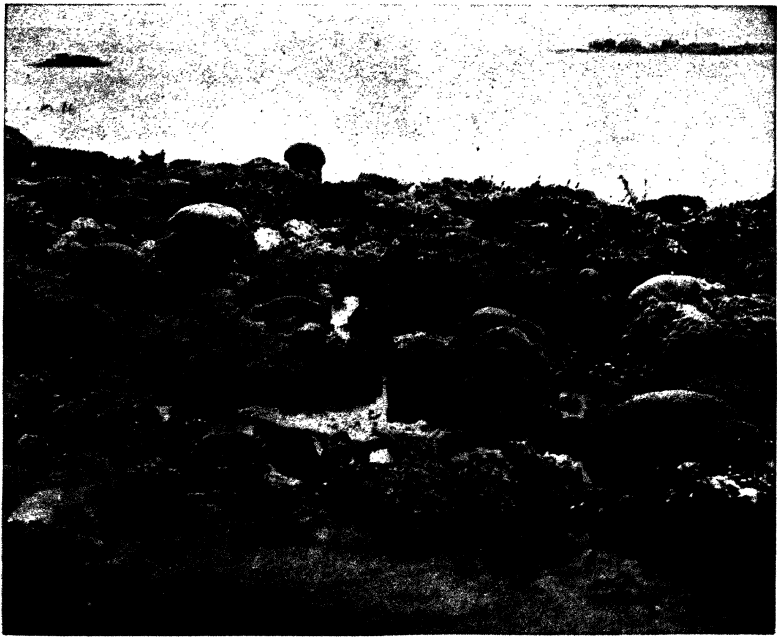
CORAL



ALCYONARIANS AND MILLEPORES.

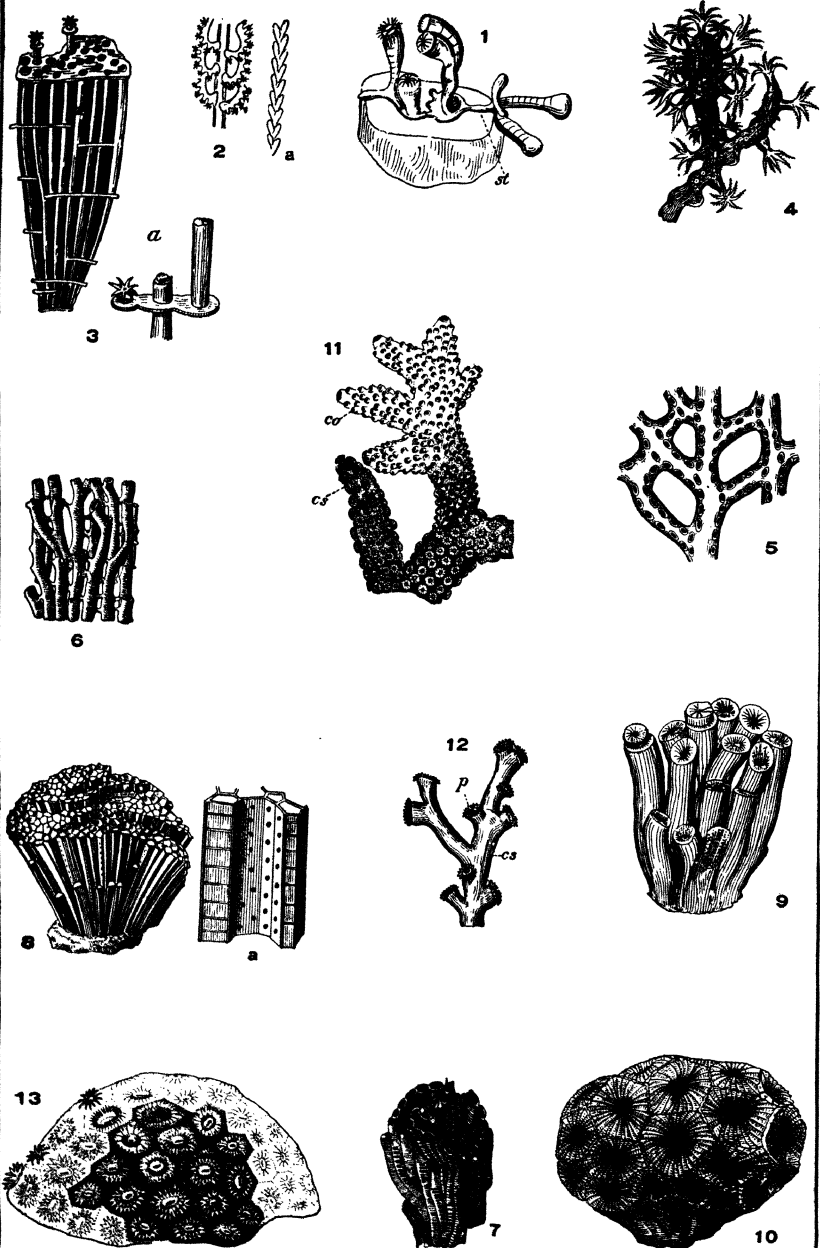


LIVING MADREPORES.



AN AUSTRALIAN CORAL REEF AT LOW TIDE.

CORAL



For description, see article CORAL.

Stroehlin, *Athanasio Coquerel, fils* (2 vols., Paris, 1896).

COQUES, kòk, or **COCK**, GONZALES (1618-84). A Flemish portrait painter. He was born in Antwerp and studied under the third Pieter Breughel, and afterward with David Ryckaert the elder. He quickly gained a reputation, received commissions from many of the princes and notable persons of the time, and held several positions of honor. He painted almost exclusively portraits and family groups engaged in different tasks, the backgrounds being often by other artists. They are very small, but a certain elegance of manner has given him the title of "Van Dyck in miniature." In his restricted sphere he attained a rare perfection, and the new style of art he created for the southern Netherlands was continued by Francheys and Biset. His art is represented in the galleries of Berlin, Dresden, Brussels, Paris, Vienna, etc., and in many private collections, including that of John Wanamaker, Philadelphia.

COQUETTE, kò-két' (Fr. *coquette*, flirt, fem. of *coquet*, gallant, little cock, from *cog*, cock; so called from its fanciful plumage). A kind of humming bird, of which a dozen species are known, constituting the genus *Lophornis*, and scattered from the lowlands of Mexico to and throughout the Amazon region. The coquettes are small, crested, and exquisitely adorned with spangled frills on each side of the neck; the tail is long and capable of wide spreading; the colors varied and brilliant, and the whole effect of the bird is peculiarly gemlike. See **CROSS FERTILIZATION** and **PLATE OF HUMMING BIRDS**.

COQUI, kò'kè (probably of West Indian origin). A West Indian tree frog (*Hylodes martinicensis*), remarkable for undergoing its whole metamorphosis within the egg. "The pairing takes place on land in the months of May and June, when the female lays about 20 eggs, which are enveloped in a foamy mass and glued onto a broad leaf, or hidden in the axillae of irridaceous plants. The mother seems to remain in the neighborhood watching the eggs, which are large, measuring 4 to 5 millimeters in diameter . . . pale and straw-colored. The embryo develops neither gills nor gill openings, but a large, well-vascularized tail, by means of which, being immersed in the watery fluid contained within the egg, it seems to breathe. After 21 days the tadpole, having used up all the available yolk and fluid, and most of its own tail, bursts the eggshell and hops away as a little frog." Consult Gadown, *Cambridge Natural History*, vol. viii (London, 1901).

COQUILLA (kò-kwíl'á) **NUT** (Sp. *coquillo*, coconut). The fruit of a palm, *Attalea funifera*. It is exported from South America, being used to a considerable extent in America in the manufacture of buttons and in turning various small ornaments. It is also called "vegetable ivory." The imports into the United States were in 1913 approximately 30,000,000 pounds, valued at about \$1,000,000, and were chiefly from Colombia, Ecuador, and Panama. The importations of 1913 were nearly double those of a decade earlier. See **ATTALEA**; **PIASSABA**.

COQUIMBITE, kò-kim'bít. A hydrous sulphate of iron resembling copiapite (q.v.) in composition and occurrence, but crystallizing in hexagonal forms. It is found near Copiapó, Chile.

COQUIMBO, kò-kém'bó. A seaport in the Province of Coquimbo, Chile, about 10 miles

south of La Serena, the capital of the province, with which it is connected by rail (Map: Chile, C 10). It has a good harbor, a lighthouse with a revolving light, a customs office, and exports chiefly copper ores and cattle. It is the residence of a United States consular agent. Pop., 1903, 8478; 1910, 12,106.

COQUIMBO. See **BURBOWING OWL**.

COQUINA, kò-ké'na (Sp., shellfish, from Lat. *concha*, Gk. *κόχνη*, *konchē*, shell, Skt. *śaṅkha*, conch shell). A porous variety of limestone which occurs in Florida. It is made up of cemented fragments of shells and corals that have been cast about by the waves and accumulated in some sheltered basin of the sea bottom. Coquina is extensively used for building stone in Florida and the Bermudas.

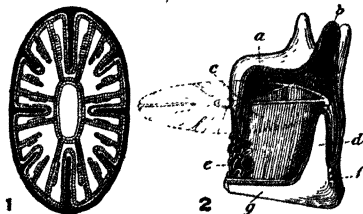
CORA. A group of tribes of the Piman family, occupying parts of the Rio de Jesus Maria, Jalisco, Mexico. See **PIMAN STOCK**.

CORABÉCAN. A small linguistic stock—the language is long extinct—whose representatives formerly dwelt in the forested region of eastern Bolivia. Rivet thinks that it is a dialect of Otquian, or Otuké.

CORACLE (Welsh *coruwl*, *coruwl*, coracle, from *coruwl*, *coruwl*, Ir. *curachan*, skiff). A boat of oval shape with a frame of wickerwork covered with hide or oiled cloth, which covering is removed when the boat is not in use. The ordinary coracle will carry comfortably only one man, but it is so light that he can easily carry it on his back to a place where it may be safely deposited. See **CURRACH**.

CORAIS, kò'rà', ADAMANTIOS. See **CORAY**, ADAMANTIOS.

CORAL (OF. coral, Lat. *corallum*, *corallius*, from Gk. *κοράλλιον*, *korallion*, coral; of uncertain origin, possibly a loan word from Heb. *gōrāl*, small stone). A calcareous or horny secretion or deposit of many kinds of polyps of the class Anthozoa, which assume various and often beautiful forms. Millepore "coral" is produced by polyps of the class Hydrozoa. (See **MILLEPORE**.) The coral-producing polyps form



STRUCTURE OF A SIMPLE CORAL.

1. Diagrammatic cross section of a coral: the black part represents the stony outer wall (theca) and partitions (septa), the open lines, the fleshy lining and partitions (mesenteries). 2. Semi-diagrammatic view of a coral *a*, a septum, *b*, a tentacle, *c*, position of the gullet; *d*, theca, *e*, mesenteric filaments, *f*, epitheca, *g*, basal plate.

colonies which increase by gemmation, young polyp buds springing from the original polyp, sometimes indifferently from any part of its surface, sometimes only from its upper circumference, or from its base, and not separating from it, but remaining in the same spot, even when the original or parent polyp has ceased to exist, and producing buds in their turn. The calcareous or horny deposition begins when the

polyp is single, adhering to a rock or other surface, on which the coral grows or is built up, the hard deposits of former generations forming the base to which those of their progeny are attached. One layer of the chambers, of which the greater number of corals are composed, occasionally surrounds another like the concentric circles in the wood of exogenous trees; one layer is sometimes deposited above another; the whole structure sometimes branches like a shrub, spreads like a fan, or assumes the form of a cup, a flower, or a mushroom. Under the common name "coral" are included many species, also designated "madrepores" (q.v.), and some have received other names derived from peculiarities of their form and appearance, as "brain coral," etc. This last forms into large rounded masses furrowed with winding depressions like the convolutions of a mammalian brain or the windings of a meadow brook; hence its technical name is *Meandrina*. In the greater number of kinds, besides the plates which form and separate the polyp cells, and which are variously arranged, there is a more solid internal or central part, formed by the additional deposition of matter at the bottom of each polyp cell, or from the common living part in which the polyps are united. The calcareous framework is sometimes further strengthened by a greater or less mixture of horny animal matter with the purely calcareous substance.

Kinds of Corals.—Corals are roughly classed under two heads, the horny corals and the lime or stone corals. The former consist chiefly of a horny secretion from the polyps, which may include also separate particles of lime, while the stone corals consist almost wholly of lime firmly united in a solid mass. No sharp line can be drawn between these two groups, for all possible gradations can be found. The *Antipatharia* and *Alcyonaria* as a rule have a horny skeleton, while the millepores and madrepores are almost wholly limestone. The polyps of the common red, or precious, coral (*Corallum rubrum*) belong to the suborder *Alcyonaria* (q.v., for illustration); but the central axis in this and other corals forming the family *Corallidae* is quite solid, and is produced in concentric layers by the living gelatinous substance which envelops it like the bark of a tree, and from which the polyps project like buds, or, when their tentacles are expanded, like little flowers. Another alcyonarian coral of more than usual interest is the "organ-pipe" coral (*Tubipora*) in which no central axis fills in behind the polyps, but the chambers in which they live remain as open, elongated tubes, crowded together side by side to form a solid mass. Its polyps are violet or grass-green, but the coral itself is red or purplish. These corals are found in the Indian and Pacific oceans. Many of the madrepores have the whole calcareous framework covered,

as in the *Corallidae*, by a gelatinous living substance which unites all the polyps. The whole living part soon decomposes and disappears, when the coral is taken out of the water, in some species almost immediately running from the calcareous part as a watery slime.

Utilization.—Red coral—so much admired for its fine color and susceptibility to a high polish and much used for ornamental purposes—is chiefly obtained from the Mediterranean, in some parts of which extensive "fisheries" are carried on. It is brought up from considerable depths by means of a sort of grappling apparatus dragged after a boat or boats, the pieces being broken from the bottom by beams of wood which are sunk by weights and then entangled among hemp. Red coral has a shrublike branching form and grows to the height of about one foot, with a thickness like that of the little finger. Much of the coral of the Mediterranean is exported to India, but red coral is also obtained in the Red Sea, the Persian Gulf, etc. Black coral (*Antipathes*), the axis of which is more solid, is still more highly prized. Coral was known to the ancients and was used for ornamental purposes by the Gauls.

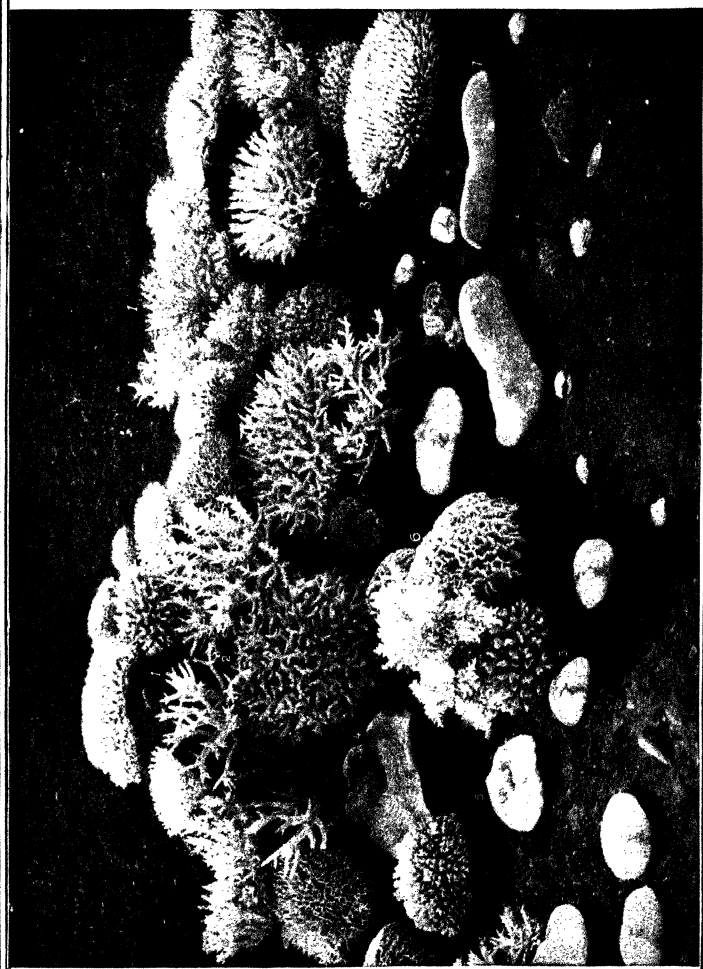
Reefs.—The formation of coral reefs and islands is one of the most noteworthy results of the action of coral polyps. Many kinds of polyps are concerned in the building of a reef, but the growth is mainly dependent on the stone corals. Reef-building corals only flourish in clean, fresh sea water, which is not over 125 feet in depth and never is cooler than 68° F. They are consequently confined to the tropics and to shallow water and never thrive near the mouths of rivers. Although reef-building corals are not found on the coast of the United States north of Florida, some species of coral occur much farther north. Even on the coast of New England there is to be found quite commonly a true stone coral (*Astrangia danae*), the polyps of which when expanded are large and very beautiful. See CORAL ISLAND AND CORAL REEF.

Fossil Forms. Among the fossil corals only those belonging to the Anthozoa are of importance, those of the Hydromedusae either not appearing until the Mesozoic, and then but sparingly (for fossil Hydrocorallinae and Tubulariae, see COELENTERATA), or not being clearly recognized as to their systematic position and only provisionally referred to the Hydrozoa. (See STROMATOPOREA; GRAPTOLITE.) The Anthozoa appear in the Cambrian rocks with the Archæocyathinae, forms of peculiar structure and uncertain relationships. In the Upper Silurian period they have become the most important fossils, as well in number of individuals as in diversity of structure and importance as rock-building organisms. They continue thus throughout geologic times and are hence of

REPRESENTATIVE FORMS OF CORALS.

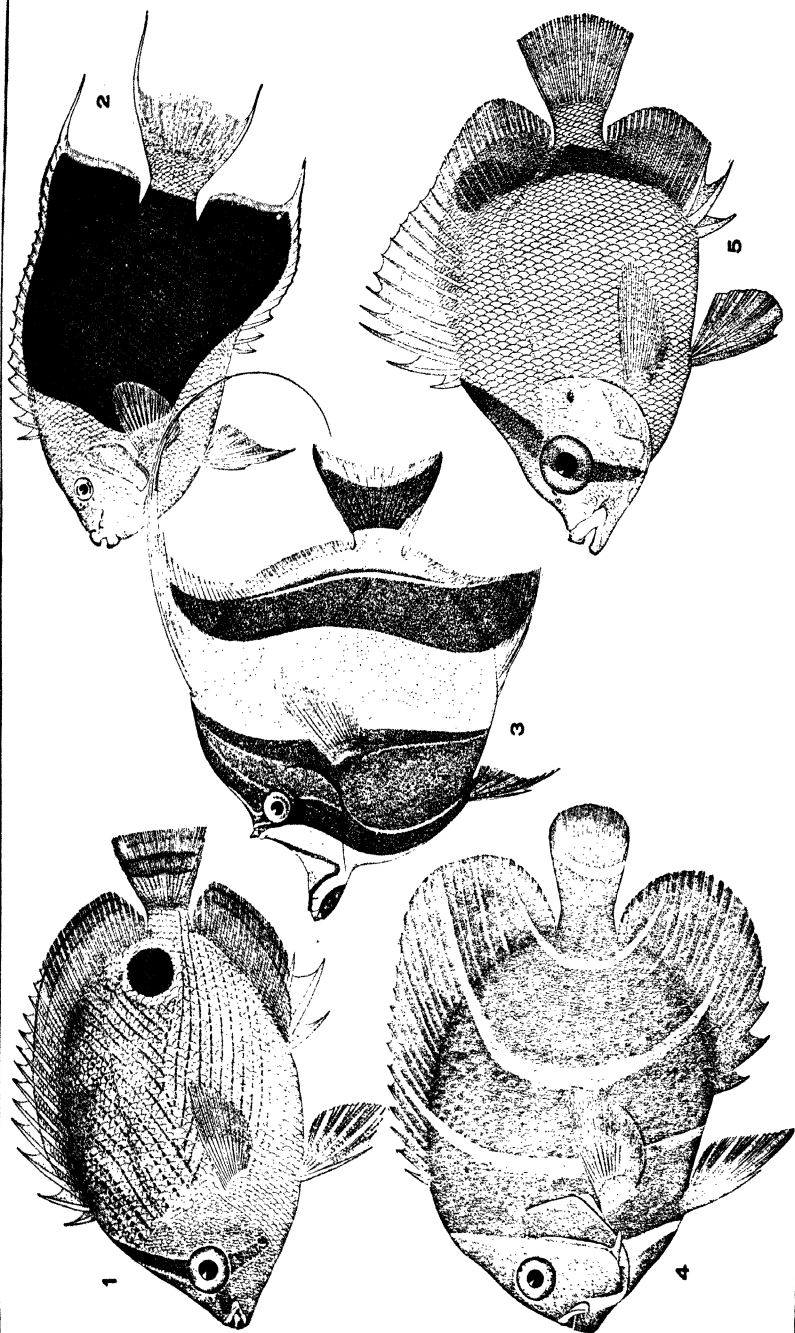
1. Beginning of a colony (of *Zoanthus*), showing simplest mode of budding from a creeping stolon (sc). 2. Sea pen, or pennatulid (*Vergularia mirabilis*), a portion of the stem in the living condition; a, the same, dead. 3. Organ-pipe coral (*Tubipora musica*), skeleton of a colony showing two living polyps; a, manner of growth, by budding from the lateral shelf-like expansions. 4. Red or "precious" coral (*Corallum rubrum*), part of a living colony. 5. Part of a fan coral (*Rhipidogorgia flabellum*), showing the polyp cells. All the foregoing are Alcyonarians. The following are "true" or "stone" corals. 6. *Syringopora rumulosa*, fossil in the Carboniferous of Germany. 7. *Halysites ctenularia*, fossil in the Silurian of Gotland. 8. *Favosites polymorpha*, fossil, Devonian; a, corallites, enlarged, two of them broken open and showing tabulae. 9. Cup coral (*Cyathophyllum cespitosum*), fossil in the Devonian of Germany. 10. Cup coral (*Cyathophyllum hezagonum*), fossil in the Devonian of Germany. 11. A madrepore (*Madrepora aspera*); the lower part shows the living polyps, the upper part naked (dead) corallum, at the summit of a bushy branch. 12. Part of a branching coral (*Dendrophyllum*) in which a common calcareous stem (sc, conenchyma) is formed by calcification of the connexure (ce) and gives origin to the individual corallites (ce); p, an active polyp. 13. Star coral (*Astræa*), an example of the massive type of reef corals, in its living condition.

CORALS FROM THE GREAT BARRIER REEF, AUSTRALIA



1. STAGHORN CORAL (*Madrepora muricata*), etc.
2. A MADREPORA (*Madrepora formosa*).
3. A MADREPORA (*Madrepora convexa*).
4. A FUNGOID FORM (*Podobacia crustacea*).
5. SEVERAL MUSHROOM CORALS (*Fungia laceria*).
6. A RELATED SPECIES (*Mussa multilobata*).
7. *HERPETOLITHIA TALPINA*.

CORAL FISH



great importance to the paleontologist and geologist. As they are also objects of great beauty, they are much sought by collectors and dealers. Especially rich and famous are the fossil coral faunas of the Silurian of North America and Gotland; the Devonian of the Helderbergs of New York, the Falls of the Ohio, and the Rhenish provinces; the Jurassic formations of middle Europe and the Tertiary beds of northern Italy.

The Anthozoa are divided by Haeckel into the subclasses Tetracoralla, Hexacoralla, and Octocoralla, according to the number of their septa, which were considered to be multiples of these figures. The Tetracoralla comprise, together with the Tabulata, the Paleozoic corals; the Hexacoralla and Octocoralla, the Mesozoic and later forms. Recent investigations on the embryology of the Hexacoralla and thecal structure of the Tetracoralla (Dr. M. Ogilvie) seem to demonstrate that these divisions are artificial, that the tetrameral system is only an ancestral feature strongly marked in certain of the old families (Cyathophyllidae, Zaphrentidae, Cyathaxonidae), while hexamerall symmetry is but one of many forms of radial symmetry. The Anthozoa are therefore at present divided into but two subclasses, according to Ray Lankester: the Alcyonaria, or Octocoralla, and the Zoantharia. None of the fossil alcyonarians, which with doubtful forms do not appear till the Mesozoic, are of importance; the Paleozoic Heliolitidae, which are referred with doubt to this subclass, are quite abundant in the Silurian and Devonian rocks.

The subclass Tabulata, of Milne-Edwards and Haime, comprising common and important Paleozoic genera, such as *Favosites*, *Aulopora*, *Syringopora*, *Halsites*, and *Chonetes*, which was long considered as a distinct subclass characterized by the slight development of the septa and the presence of numerous tabulae, has now been broken up, it having been recognized that some families belong to the Octocoralla, others (*Favositidae*, *Syringoporidae*, *Halsitidae*) exhibit close relationships to the Hexacoralla, and others (*Chonetidae*, *Monticuliporidae*) are even placed by some authors, as Ulrich, among the Polyzoa. All these very primitive groups of tabulate corals played important rôles as Paleozoic reef builders.

Bibliography. Milne-Edwards and Haime, "Monographie des Polypiers fossiles des terrains Paléozoïques," in *Archives du Muséum*, vol. v (Paris, 1851); Roemer and Frech, *Lethaea Palaeozoica*, vol. i (Stuttgart, 1883); Ogilvie, "Structure and Classification of Corals," in *Philosophical Transactions*, vol. cxxxvii (London, 1896); G. C. Bourne, "The Anthozoa," in Lankester's *Treatise on Zoology*, part ii (ib., 1900); Hickson, "Cœlenterata," in *Cambridge Natural History*, vol. i. (ib., 1906).

CORALBERRY. See SNOWBERRY.

CORAL FISH. A name given in a general way to various tropical fishes of the families Chaetodontidae and Pomacentridae, because they frequent submarine coral growths. All are much compressed, high-backed fishes of brilliant hues; and most of them are marked with vertical black bars, and possess filamentous appendages upon the fins and tail. They remain among the branching corals for safety, and are further protected, apparently, by the curious pattern of their coloration. Many species abound in the waters from Bermuda to Brazil, where several

species are known as "angel fishes." All are small, but excellent eating.

CORAL ISLAND AND CORAL REEF.

An island or marine ridge formed from the petrified skeletons of coral polyps. They are numerous in the warmer portions of the Pacific and in the Indian Ocean, where the growth of coral goes on with great rapidity, occurring to a lesser extent in the Gulf of Mexico and along the Atlantic shores of the West Indies. The coral islands and reefs may be classed, according to their general form, into fringing reefs, barrier reefs, and atolls. *Fringing reefs* are closely attached to the shore line of an island or land mass and extend outward as a submarine platform. *Barrier reefs* lie at some distance from the land, the intermediate space being occupied by a shallow lagoon of salt water. Usually some parts of the barrier rise above the level of the ocean as islets which support a scanty vegetation, while the position of the submerged reef is indicated by a line of breakers. An excellent illustration of this type is the Great Barrier Reef of Australia, over 1000 miles long, lying off the east coast of Queensland. *Atolls* (q.v.) are of rude circular form, inclosing a lagoon, but without any visible land to which the reefs are attached. Their presence is made known by a girdle of breakers and by wave-formed islets on which the coconut palm and a few other tropical plants grow. The central lagoon of placid, transparent water is usually less than 300 feet deep, and when there are passages through the reef it constitutes a safe harbor for ships. Soundings have shown that the slope of the bottom is gentle in the interior, but very steep on the seaward side of the reef, indeed being sometimes almost perpendicular. The Pelew Islands of the Caroline Archipelago, the Low Archipelago in the Pacific, and the Laccadive and Maldivé island groups in the Indian Ocean, exhibit many examples of atolls.

Formation of Reefs. The great masses of coral rock have been built up by the continuous growth of various genera and species of corals, which secrete carbonate of lime dissolved in the sea water. The coral polyps flourish only under certain conditions; their growth requires clear, warm, salt water, an abundance of food, and a water depth of not more than 20 fathoms. They cannot live in muddy or brackish water, or in regions where the mean temperature for any month falls below 68° F. The polyp also does not grow above the level of the lowest tides. As to the rate of growth of coral many observations and estimates have been made. Some species build up a reef as rapidly as three inches per year, others increase less than one inch in the same time. Alexander Agassiz estimates that the corals on the Florida coasts would construct a reef from the depth of seven fathoms to the surface in a period of from 1000 to 1200 years.

Under the special conditions necessary for the growth of coral it is a matter of interest to discover by what means the reefs and atolls have been formed, that often rise from depths of several hundred and even thousands of feet. Darwin, who recognized the fact that shallow water was necessary for the living polyp, inferred that the sites of the reefs must have undergone a gradual subsidence, corresponding to the growth of the reef upward. According to his theory, the colonies of polyps first settled along the

shores of an island, where after a time a fringing reef would be formed (Fig. 1). Then, if the ocean floor subsided at a sufficiently slow rate to permit the growth of the coral to be con-



FIG. 1.

tinued on the outward side of the reef, the water channel would gradually widen and deepen and a barrier reef (Fig. 2) would be formed,

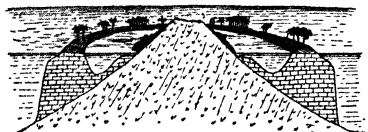


FIG. 2.

which, after a long interval, upon the submergence of the entire island, would give way to an atoll (Fig. 3). This simple explanation,



FIG. 3.

first advanced by Darwin in 1835 and afterward elaborated by J. D. Dana, found wide acceptance among geologists. It was soon discovered, however, that in certain cases the theory of submergence did not conform with the actual conditions. Semper, in 1868, directed attention to the Pelew Islands, where the sea floor and the reefs built thereon have actually undergone elevation. Later, Murray pursued the study of the question still further and was able to show that reefs do not necessarily require a sinking shore for their formation, but they may grow on a stable foundation such as a submarine bank, raised to near sea level by accumulation of fossil organisms, or the slopes of a volcanic island. After becoming established in such localities the corals continue their growth outward, and at the same time wave action washes down debris from the reef to the bottom, forming a platform for their further activity. In case the original foundation was above sea level the projecting portion may have been cut down by breakers. The solvent action of water would remove the dead coral from the interior of the reef and thus excavate a basin to be occupied by the lagoon. The same conclusions were reached by Alexander Agassiz in his extended investigations of coral islands. Agassiz also explained certain barrier reefs as having been formed by the growth of a thin wall of coral on the outer edge of a wave-cut submerged platform surrounding a volcanic island. In the latter case neither subsidence, elevation, nor solution is necessary for reef development. The several theories of

reef building are probably to be accepted as valid, and each must be tested by actual conditions before its application in any particular instance can be determined. Darwin's theory of subsidence, therefore, has not been displaced by the more recent work, but given a limited field of application.

Bibliography. Darwin, *The Structure and Distribution of Coral Islands* (New York, 1891); Dana, *Coral Islands and Coral Reefs* (ib., 1890); Agassiz, *A Visit to the Great Barrier Reef of Australia in the Steamer Croydon in 1896* (Cambridge, Mass., 1898); Murray, "On Coral Reefs and Other Carbonate of Lime Formations in Modern Seas," in *Proceedings of the Royal Society of Edinburgh*, vol. xvii (Edinburgh, 1891); id., "On the Structure and Origin of Coral Reefs and Islands," in *Proceedings of the Royal Society of Edinburgh*, vol. x (ib., 1880); Agassiz and Pourtales, *Monograph of the Corals of Florida* (Cambridge, Mass., 1871); Hellprin, *The Bermuda Islands* (Philadelphia, 1889); Davis, "Dana's Confirmation of Darwin's Theory of Coral Reefs," in *American Journal of Science*, 4th series, vol. xxxv (New Haven, 1913). See ATOLL; CORAL.

CORALLINÆ, or COR'ALLINE ALGÆ (Lat. nom. pl. fem. of *corallinus*, made of coral, from *corallum*, *corallus*, coral). A group of red algæ (Rhodophyceæ, q.v.), distinguished by the calcareous incrustations secreted by the thallus. The thallus is branching, usually articulated, and forms stony masses like those of the branching corals with which these algæ are often associated. Corallinæ are important rock-making organisms in some formations, especially of Tertiary age, such as the Lower Eocene of Ariège, and the nummulitic Limestone of the Alps. The genus *Corallina* itself, now abundant, was rare during Tertiary time. Lithothamnium, however, appeared in Jurassic time, extending through the Cretaceous, was very abundant during the Tertiary, and has persisted to the present era. Consult: Gümbel, "Die sogenannten Nulliporen, etc.," in *Abhandlungen der königlich bayerischen Akademie der Wissenschaften*, vol. ii (München, 1874); Unger, "Beitrag zur näheren Kenntniss des Leithakalkes," in *Denkschriften der Kaiserlich-königlichen Akademie der Wissenschaften zu Wien*, vol. xiv (Vienna, 1858); Zittel and Schimper, "Traité de paléontologie," part ii, *Paléophytologie* (Paris, 1891). See ALGÆ.

CORAL SEA. That part of the Pacific Ocean off the east coast of Australia, extending between the parallel of 25° S., and Torres Strait (Map: Australasia, G 4). Its boundaries are indefinite, but it is generally considered to extend from the Australian coast to the irregular line of islands, including the western outposts of the Solomon and New Hebrides groups, from New Caledonia to the Louisiade Archipelago. The coral growths of the Great Barrier Reef lie along its western boundary.

CORAL SNAKE. A poisonous serpent of the genus *Elaps*, common in tropical America and also represented in Africa, so called because coral red is its prevailing color. There are many species, each marked by some different arrangement of black and yellow rings; the epidermis is also iridescent, probably due to laminations on the scales, and no more beautiful snakes exist. (See Plate with article SNAKE.) All are small, of terrestrial habits, and provided with a poison apparatus sufficient for the

killing of small animals and birds, but rarely fatal to man. A representative species (*Elaps fulvius*) is well known from Mexico to South Carolina and common in Florida, as the "coral snake," "American cobra," "garter snake," and "harlequin"; it is the only poisonous snake, not



CORAL SNAKE OF FLORIDA.

crotaline, in the United States, and, though small and gentle, is not safe to handle. Coral snakes do not strike, as do other poisonous snakes, but twist rapidly about until the head touches the object of their irritation, when they seize it and chew until their fangs have sunk in. These snakes spend most of their time burrowing in the ground, where they lay six or eight eggs. Consult *Report of United States National Museum* (Washington, 1893), and Males and Ulrich, "Serpents of Trinidad," in *Proceedings of Zoological Society of London* (London, 1894); Ditmars, *The Reptile Book* (New York, 1907). See CYLINDER SNAKE.

CORAM, THOMAS (1668-1751). An English philanthropist, born at Lyme Regis, Dorsetshire. His father was a merchant captain, and he was probably a shipwright by profession. He settled in Taunton, Mass., in 1694 and returned to England in 1703. He was constantly interested in philanthropic schemes, particularly in the establishment of the Foundling Hospital, which was accomplished after many years of struggle. The institution was opened in Hatton Garden in 1740. Coram was also a promoter of the English settlements in Georgia and Nova Scotia. In later life he lost most of his fortune and at his death was in possession of an annuity from the government. He was buried in the chapel of the Foundling Hospital. One of Hogarth's best portraits is that of Coram, which has hung in the hospital since its presentation by the painter (1740).

CORAM-BIS. In Shakespeare's *Hamlet*, the name given in the quarto edition of 1603 to the character afterward called Polonius.

CORANACH, KŌR'Ā-NĀK, CORONACH, COR-ANICH, or CRONACH (Gael, Ir. *coranach*, from Gael, Ir. *comh*, with + Gael. *ranach*, a crying, from *ran*, to cry out). A funeral dirge, formerly in use among the Irish and Scottish Celts. "The cries (coranach) are called by the Irish the ulaghne and hululu, two words extremely expressive of the sound uttered on these occasions (funerals); and being of Celtic stock, etymologists would swear to be the origin of the *ololungon* of the Greek, and *ululatus* of the Latins."—Pennant's *Tour*.

The coranach seems to be identical with the Irish *caoine*, generally written and pronounced *keen*, a dirge for the dead, "according to certain loud and mournful notes and verses" wherein the pedigree, property, the good and great deeds of the deceased, and the manner of his death are recounted, in order to excite sorrow or revenge in the hearers and to show them the loss they have sustained.

The word, in one or other of its forms, occurs in the writings of many of the ancient Scottish authors:

"Cryand fer yow the cairfull corrinnoeh."

Sir D. Lindsay.

"Cryand the corynooh on hie."

Battle of Harlaw.

"Be he the corrennoeh had done about."

Dunbar.

The coranach has long since fallen into disuse among the Highlanders. The funeral lament performed on the bagpipes, which may be considered as an instrumental coranach, lingered on till the latter half of the eighteenth century.

For specimens of the coranach, see Sir Walter Scott's *Lady of the Lake* and accompanying notes; Crofton Croker's *Researches in the South of Ireland* (1824); *Blackwood's Magazine*, vols. xiii and xxiii; and Jamieson's *Etymological Dictionary of the Scottish Language*, revised by Longmuir and Donaldson, vol. i, p. 494, under *coranach* (Paisley, 1879).

COR ANGLAIS, KŌR ĀN'glā' (Fr., English horn). 1. A wooden wind instrument of the double reed species, the body of which was formerly bent in the form of part of a circle, which accounts for its being called a horn. It is merely a large oboe (called in German *Altoboe*, i.e., 'alto of the oboe'), and is usually played by oboe players. Its compass is two octaves and a fifth from e to b'. Modern composers employ for this instrument only the G clef. It is a transposing instrument, and music for it is written a fifth above its real tones. 2. Also the name of an eight-foot organ stop occasionally used in French and English pipe organs. For illustration, see MUSICAL INSTRUMENTS.

CORATO, KŌ-rā'tō. A city of southeastern Italy, in the Province of Bari delle Puglie, about 26 miles west of the city of Bari (Map: Italy, L. 6). Not far from Corato are the ruins of the Castel del Monte, built by the Emperor Frederick II, in which the sons of Manfred (q.v.) were imprisoned. The town carries on a trade in cattle and leather, the surrounding country being well adapted for grazing. A good deal of tartar is manufactured here as well as wine and oil. Pop. (commune), 1881, 30,552; 1901, 41,573; 1911, 45,307.

CORAY, KŌ-rā', CORAËS, or KORAËS, AD-AMANTOS (1748-1833). A Greek classical scholar and patriot. He was the son of a merchant in Smyrna. He engaged in trade in Amsterdam, but in 1782 went to Montpellier to study medicine and natural history. From 1788 till his death he lived in Paris. Stimulated by the French Revolution, Coray was one of the first to attempt to revive modern Greek literature, and his political tracts did much to arouse the Greeks to successful revolt against Turkish rule. Of his classical works the most important is his edition of Heliodorus' romance, *Ethiopian Histories*, his commentaries on the writings of Hippocrates, and his editions of Xenophon's *Memorabilia*, Plato's *Gorgias*, and Strabo. His work, *Atacta, ou mélanges sur la littérature grecque moderne* (1828-35), did much to elevate the modern Greek literary language. Consult his autobiography in Greek (Paris, 1833) and a Latin translation of it by Schultz (Liegnitz, 1834); also Sinner, *Life and Works of Korais* (Zurich, 1837); and Bywater, in *Journal of Hellenic Studies*, vol. i (London, 1881). See ROMANIC LITERATURE.

COR'BAN (Heb. *gorban*, offering, from *qarab*, to draw or bring near, to offer). A term used by the Jews to denote things offered or devoted to the Deity. In the Priestly Code it is the

regular word for an offering to God of any kind (Lev. ii. 1, 4, 12, 13, etc.). Such an object was necessarily sacred and could not be applied to profane use. Later the word came to be the technical expression for formally setting a thing apart as sacred to God or God's use, but it often was used when there was no real intention of devoting a thing to God. Certain of the schools held that the mere pronunciation of it, however rashly, constituted a vow. Hence it often became a convenient makeshift to avoid a distasteful duty. Thus a son might say his money or other property was corban and so escape the obligation to use it for the support or need of a parent. This interpretation was rebuked by Jesus (Matt. xv. 5; Mark vii. 11), and also by certain broad-minded and humane rabbis.

CORBEIL, kôr'bâ'y' (Lat. *Corbolum*). A town in the Department of Seine-et-Oise, France, at the junction of the Essonne with the Seine, 18 miles south-southeast of Paris (Map: France, N., H 4). It consists of an old and a new town. From the tenth to the twelfth century it was the chief town of a powerful countship; was besieged by the Duke of Burgundy in 1418, by the Huguenots in 1562, and by Alexander Farnese in 1590. The Gothic church of Saint-Spire (tenth century) was rebuilt in the fifteenth century. The town has flour mills, print works, cotton factories, and manufactures of watches, clocks, etc. The Moulins de Corbeil are the largest flour mills in France. The Decauville engineering works are near by. Pop., 1901, 9362; 1911, 10,746.

CORBEL (OF. *corbel*, Fr. *corbeau*, basket, from Lat. *corbis*, basket). A support, usually of stone, projecting from a wall and forming an integral part of it. In France it is not a corbel unless it has parallel sides, but the English usage includes also those forms of support, called in French *culs-de-lampe*, which project from the wall to carry colonnettes, vaulting shafts, vault ribs, etc. They are often elaborately carved with foliage and volutes. A row of corbels supporting a horizontal coping or cornice is called a *corbel table*. See BRACKET; CANTILEVER; CONSOLE.

CORBENIC. The name of a stronghold erected by Galafres after his conversion as a shrine for the Holy Grail. It is called also the Palace of Adventure, and in it Galafres, christened Alphasan, is stabbed to death.

CORBETT, JULIAN STAFFORD (1854-). An English barrister and man of letters, born in Surrey and educated at Trinity College, Cambridge. He practiced law until 1882, was special correspondent of the *Pall Mall Gazette* on the Dongola expedition, 1896, lectured on English history at Oxford in 1903, and was appointed lecturer in history to the Naval War College. Besides several romances, his writings include: *England in the Mediterranean* (1904); *The Campaign of Trafalgar* (1910); *Some Principles of Maritime Strategy* (1911); *The Spencer Papers* (1913).

CORBETT, LEE CLEVELAND (1867-). An American horticulturist, born at Watkins, N. Y., and educated at Cornell University, where from 1891 to 1893 he was assistant horticulturist. He was professor of horticulture and forestry at the South Dakota Agricultural College in 1893-95 and at the West Virginia University from 1895 to 1901, and then he became horticulturist in the United States Department of Agriculture. His publications include *Garden*

Farming (1913); *Intensive Agriculture* (1913), and the following experiment station bulletins: *Pruning* (1903); *Cranberry Culture* (1903); *The School Garden* (1904); *Strawberries* (1904); *Tomatoes* (1905); *Raspberries* (1905); *Beans* (1907); *Cabbages* (1911); *Ice Houses* (1911); *Tomato Growing as Club Work in the North and West* (1913).

CORBIE, kôr'bê'. A town in the Department of La Somme, France, 10 miles northeast of Amiens (Map: France, N., H 3). It has cotton, woollen, and hosiery factories. Pop., 1901, 4133; 1911, 4408. Corbie owes its fame to the Benedictine abbey founded here in 662 by Queen Balthilde. A beautiful statue of the Queen remains. Of the abbey, the church of St. Pierre alone remains. The banished King Desiderius was sent here by Charlemagne in 774. Corvei (q.v.) owes its origin to Corbie.

CORBIE STEPS, CORBEL STEPS, or CROW STEPS (a Scottish corruption of *corbel steps*, from OF. *corbel*, corbel, but confused by popular etymology with Scotch *corbie*, crow, from ME., OF. *corbin*, Lat. *corvinus*, crow, and supposed to mean 'steps for crows'). In architecture, the succession of steps with which the gables of old houses are ornamented in Scotland. This gable ornament is by no means peculiar to Scotland and France, but is met with in Flanders, Holland, and all over Germany, where it is even more characteristic and general, especially in the brick architecture of north Germany—both of churches and of houses.

CORBIN. A city in Whitley Co., Ky., about 80 miles (direct) south by east of Lexington (Map: Kentucky, F 6). It is at the junction of three divisions of the Louisville and Nashville system and is essentially a railroad town. There are some deposits of coal, railway repair shops, and a woodworking plant. Corbin has a Catholic academy and owns its water works. Pop., 1900, 1544; 1910, 2589.

CORBIN, HENRY CLARK (1842-1909). An American soldier, born in Clermont Co., Ohio. In 1862 he entered the Union army as a lieutenant in the Eighty-third Ohio Volunteers, but in the following month was transferred to the Seventy-ninth Regiment. He was major of the Fourteenth United States colored troops in 1863, lieutenant colonel in 1864, and colonel in 1865, and remained with the Army of the Cumberland until the close of the war, when he was brevetted brigadier general of volunteers. In 1866 he entered the regular army as a second lieutenant in the Seventeenth Infantry and became captain in the Thirty-eighth Infantry in the same year. He was appointed major and assistant adjutant general in 1880, lieutenant colonel in 1889, and colonel in 1896. After serving at the adjutant general's office in Washington, and on Governor's Island as chief of staff in the Department of the East, he was appointed adjutant general of the army in 1894. During the war in Cuba he was practically the head of the army and was involved in the criticism of the War Department, but in the reorganization of the army it was considered that he displayed industry and ability, and in 1900 he was promoted major general and adjutant general, "this grade to expire with the termination of office of the present incumbent." He was in command of the Division of the Philippines in 1904-06, when he was made a lieutenant general, and retired.

CORBIN, JOHN (1870-). An American dramatic critic and author, born in Chicago. He

was educated at Harvard University. From 1897 to 1900 he was assistant editor of *Harper's Magazine*, during part of this time acting also as dramatic critic for *Harper's Weekly*; in 1902 he wrote the dramatic notices of the *New York Times* and in 1905-07 those of the *Sun*. From 1908 to 1910 he was literary manager of the New Theatre, during the short life of which his efforts contributed much towards notably artistic productions. Besides magazine stories and articles on the drama, he is author of *The Elizabethan Hamlet* (1895); *Schoolboy Life in England: An American View* (1898); *An American at Oxford* (1902); *A New Portrait of Shakespeare* (1903); *The First Loves of Perilla* (1903); *The Care Man* (1907); *Which College for the Boy* (1908); *Husband and the Forbidden Guests* (1910).

CORBOULD, kôr'bôld, EDWARD HENRY (1815-1905). An English painter and illustrator, born in London. He studied at Sass's Art School and the Royal Academy, and when only 19 painted "The Fall of Phaethon," for which he received a gold medal from the Society of Arts. Nearly all his paintings are large historical or romantic compositions in water color, academic in style. He was appointed instructor in water color to the royal family in 1851, and many of his pictures are in their possession. Some of his best-known pictures are "Lady Godiva" (National Gallery, Sydney); "Canterbury Pilgrims," and "The Heiress" (British Museum). Among his portraits are those of the Princess Alice and the Prince Consort. He illustrated *Percy's Reliques*, *The Book of British Ballads*, etc.

CORBULO, GNÆUS DOMITIUS (?-c.67 A.D.). A Roman general under Claudius and Nero, brother of Cæsonia, wife of the Emperor Caligula. In Nero's reign he conducted a successful campaign against the Parthians under Tiridates (61-63). His successes and his popularity excited the jealousy of Nero, who gave orders for his execution. Upon hearing the Emperor's orders, Corbulo committed suicide. His account of his experiences in Asia, which is mentioned by the Elder Pliny, has been lost. Consult Schoonover, *A Study of Gn. Domitius Corbulo* (Chicago, 1909).

CORCHORUS, kôr'kô-rûs (Neo-Lat., from Gk. κόρχορος, *korchoros*, a wild plant of bitter taste). A genus of plants of the family Tiliaceæ, containing about 30 species, both shrubby and herbaceous, natives of the warm parts of the globe. *Corchorus olitorius* is widely diffused in tropical countries and introduced into America. It is an annual, with a smooth, more or less branching stem, varying in height from 2 to 14 feet or upward, according to soil and climate. It has smooth, stalked, alternate, oval, or ovate-lanceolate leaves, and small yellow flowers, solitary or in pairs. It is much used as a pot herb and is called Jews' mallow, from being much cultivated by Jews in Syria and other parts of the East. It is still more valuable for the fibre of its inner bark, as is also *Corchorus capsularis*, a species very similar, but distinguished by its capsule, which is short, globular, and wrinkled in *Corchorus capsularis* and elongated and slender in *Corchorus olitorius*. Both are much cultivated in India, yielding the greater part of the jute (q.v.) of commerce, and of the fibre employed in making gunny bags (q.v.). *Corchorus capsularis* is sometimes called Chinese hemp. *Corchorus nigricornis* is a small American shrub, occurring from the West Indies southward. It is of little

value. In Panama an infusion of its leaves is used instead of tea. See Colored Plate of FIBRE PLANTS with article HEMP.

CORCORAN, MICHAEL (1827-63). An American soldier. He was born at Carrowkeel, Ireland, emigrated to the United States in 1849, and enlisted in the army. He rose to colonel in the regular service, and in 1860 was court-martialed for refusing to parade his regiment in honor of the Prince of Wales. Before he was sentenced the hostilities of the Civil War began. He was sent to the front, was wounded, and was taken prisoner at the first battle of Bull Run. Upon his exchange he was commissioned brigadier general in 1862 and organized the Corcoran Legion, which in 1863 checked the Confederate advance on Norfolk and was subsequently attached to the Army of the Potomac. He died as the result of a fall from his horse. Consult his book, *The Captivity of General Corcoran* (Philadelphia, 1864).

CORCORAN, WILLIAM WILSON (1798-1888). An American financier and philanthropist, born in Georgetown, D. C. He was educated at Georgetown College, became an exchange broker in Washington, and in 1840 formed a partnership with George W. Riggs. At the time of the Mexican War he took a large part of the government loans and financed them so skillfully as to lay the foundation of a large fortune which he used with munificence. He was the founder of the Louise Home for impoverished gentlewomen, the Oak Hill Cemetery at Georgetown, and the Corcoran Art Gallery, and made many liberal gifts to colleges and benevolent associations. Consult a sketch of his life called *A Grandfather's Legacy* (Washington, 1879).

CORCORAN ART GALLERY. An important public collection of painting, sculpture, and ceramics in Washington, D. C. Its nucleus was the private collection of William Wilson Corcoran, which he presented to the city of Washington in 1869 with an endowment fund of \$900,000. It was opened to the public in 1874 and was originally situated on Pennsylvania Avenue, but in 1897 it was transferred to a new structure on Seventeenth Street, designed by Ernest Flagg in the Neo-Grecian style. The gallery contains, among other treasures, fine specimens of early American painters, an admirable collection of Barye bronzes, and the well-known "Greek Slave" by Hiram Powers. There is a free school of art connected with the institution, and biennial exhibitions of contemporary American painting contribute greatly to its usefulness. Consult Henderson, *The Art Treasures of Washington* (Boston, 1912).

CORCOVODA, kôr'kô-vô'dá (probably Peruvian in origin). A crane-like bird, known as the "white-backed trumpeter" (*Psophia leucopetra*) of Peru and the upper Amazon, closely related to the trumpeter (q.v.). It is domesticated and has some curious and friendly habits, described at length in *American Museum of Natural History Bulletin*, vol. ii (New York, 1887-90).

CORCY'RA. See CORFU.

COR'DA, AUGUST KARL JOSEPH (1809-49). An Austrian botanist, born in Reichenberg, Bohemia. At the age of 20 he published his *Monographia Rhizospermorum et Hepaticorum*, and in 1834 was made one of the keepers of the Museum in Prague. In 1847 he came to Texas, where he collected a large number of valuable botanic specimens; but on his voyage home, in 1848, he

was shipwrecked and drowned. His works include the following: *Icones Fungorum hucusque Cognitorum* (6 vols., 1837-54); *Prachtflora europäischer Schimmelpildungen* (1839); *Beiträge zur Flora der Vorwelt* (1845).

CORD'AGE (from cord, Fr. *corde*, ML. *corda*, Lat. *chorda*, from Gk. *χορδή*, *chorde*, string; connected with Lat. *haru-spex*, inspector of entrails). A name applied chiefly to the running rigging of a ship and to the rope of which the rigging is made. See RIGGING; ROPE.

CORDAITES, kôr-dâ'y'tez (Neo-Lat. nom. pl., named in honor of A. J. Corda). A genus of fossil plants, of the family Cordaitæ, that shows intermediate characters between the conifers and the cycads. The genus appeared in Devonian time, reaching its maximum during the coal-measure period, when it was an important forest tree of the coal-swamp flora, and declined during the Permian. The tree grew to a height of 30 to 50 feet, with a trunk that branched freely, and it had dense foliage of parallel-veined leaves of lanceolate or linear form. These leaves are found in great abundance in some coal-measure shales, where they often lie packed in layers as do the fallen leaves of a modern forest. In the Middle Devonian of New Brunswick, Canada, a formation is called the "Cordaite shale," because of the number of Cordaitea leaves it contains. The inflorescence of Cordaitea was separate as in the cycads, and the male and female elements were arranged in catkins placed in the axils of the leaves. The fructification is nutlike, resembling somewhat that of the yew or that of *Cycas revoluta* (a cycad), and has been described under the names *Cardiocarpum*, *Trigonocarpum*, etc. The trunk had a large pith, which often decayed to form a cavity of which the casts, known as Artesia and Sternbergia, are found on the dumps of some coal mines. The wood of the trunk, described partly as *Araucaroxylon*, has a microscopic structure remarkably like that of the conifers. Consult H. Graf zu Solms-Laubach, *Fossil Botany*, pp. 104-122 (Oxford, 1891). See CARBONIFEROUS SYSTEM; CYCADACEÆ; CONIFEREÆ.

CORDAY D'ARMONT, kôr-dâ' dâr'mân', MARIE ANNE CHARLOTTE (1768-93). The assassin of Marat, generally known as CHARLOTTE CORDAY. She was born at Saint-Saturnin in Normandy. Her youth, passed in a convent, was spent in the reading of Plutarch, Rousseau, Raynal, Voltaire, and Corneille. Though she was noble by birth, she sympathized ardently with the cause of the Revolution in its early phases; but when the fall of the Girondists ushered in the Terror, she swung immediately to the opposite pole. She was convinced by Barbaroux that Marat and Robespierre were the enemies of France. To the fervent student of the classics the rôle of Brutus seemed a noble one, and she determined to save the nation by murder. Telling her father that she was bound for England, she journeyed to Paris (July 1, 1793), inquired there for the house of Marat, pretending to be the bearer of a message, and bought a knife on the way. Twice delayed, she found Marat at last in his bath, writing (July 13). He had asked that morning, in the *Ami du Peuple*, for 200,000 heads, and Charlotte told him she could give him those of the Girondists at Caen. As he was setting down the names she uttered, one by one, she drove the knife up to the hilt into his heart, then made a futile attempt to escape. Marat cried out, "à moi, ma chère amie!" and

then died immediately; and the girl, quickly captured, and saved with difficulty from the mob, was taken to prison. Brought to trial and speedily condemned, she died calmly (July 17, 1793). Consult: Dubois, *Charlotte Corday* (Paris, 1838); Vatel, *Charlotte Corday et les Girondins* (Paris, 1872); *Bibliographie des femmes célèbres* (3 vols., Turin and Rome, 1892-1905); Defrance, *Charlotte Corday et la mort de Marat* (1909).

CORDEIRO, kôr-dâ'ê-rô, JOÃO RICARDO (1836-82). A Portuguese dramatist. He was born in Lisbon and in 1863 became secretary in the Conselho de Beneficencia. He was the founder of the periodical *Futuro*. His reports on charitable work contain much of value concerning the problem of poverty. In 1877 he obtained a government position under the president of the ministry, Luciana de Castro. His plays include: *Fernando* (1857); *Amor e arte* (1860); *A sociedade elegante* (1862); *A família* (1869); *Os paraizos conjugues* (1882).

CORDELE'. A city and the county seat of Crisp Co., Ga., 65 miles south of Macon, on the Georgia Southern and Florida, the Seaboard Air Line, the Atlanta, Birmingham, and Atlantic, and the Georgia, Southwestern, and Gulf railroads (Map: Georgia, C 4). It is the commercial centre of a cotton-growing region, and manufactures cottonseed oil and lumber. There are a Carnegie library and a sanitarium. Cordele was settled in 1887 and is governed under a charter of 1904 which provides for a mayor, elected biennially, and a unicameral council. The water works are owned and operated by the municipality. Pop., 1900, 3473; 1910, 5883.

CORDE'LLA. In Shakespeare's *King Lear*, the youngest daughter of the King.

CORDELIERS, kôr-d'î-yâ (Fr., cord wearers), or Society of the Friends of the Rights of Man and of the Citizen. The name given in France to the most austere branch of the Franciscan Friars on account of the girdle of knotted cord they wore. After 1790 the name was applied to the members of a political club which assembled in the abandoned chapel of a Franciscan monastery and exercised great influence on the progress of the Revolution in Paris. Its leaders were men of various opinions, Danton, Camille Desmoulins, Marat, Hébert, and the picturesque Anacharsis Clootz. It drew its strength from the very lowest classes of Paris and always had an armed mob at hand ready for insurrections. The members of the Cordeliers were the first to demand a republic, vitalizing the motto "Liberty, Equality, Fraternity," and took a very prominent part in the events of the 10th of August, 1792, and chiefly contributed to the overthrow of the Girondists (q.v.). While the club was at the height of its influence, Desmoulins began the publication of his popular journal *Le Vieux Cordelier*. Later, the spirit of the Cordeliers became so violent as to out-Jacobin the Jacobins, and men like Danton and Desmoulins abandoned it. In 1794 the Cordeliers awakened the enmity of Robespierre. On March 24 and April 5 most of the leaders were guillotined, and the club practically came to an end. Consult Bougeart, *Projet d'organisation des Cordeliers* (Paris, 1870); also *Les Cordeliers, documents pour servir à l'histoire de la Révolution* (Caen, 1891).

CORDE'ER, FREDERICK (1852-). An English musician, born in London. He studied at the Royal Academy of Music, London, gained the Mendelssohn scholarship in 1875, and, after

studying in Cologne under Ferdinand Hiller, returned to London and in 1880-82 was conductor of the orchestra at the Brighton Aquarium. In 1890 he became professor of composition at the Royal Academy of Music. He was one of the earliest English champions of the cause of Wagner, and, together with his brother Henry, translated the later music dramas of Wagner into English. His compositions include three operas, *Morte d'Arthur* (1877), *Philomel* (1879), *Nordisa* (1887); three operettas; the cantatas, *The Cyclops*, *The Bride of Triermain*, *Dreamland*, *The Sword of Argantyr*; several works for declamation with orchestra: two suites for orchestra, *In the Black Forest* and *Roumanian Suite*; two overtures, *Ossian* and *Prospero*; incidental music to Shakespeare's *Tempest*, Parker's *The Termagant* and *The Black Tulip*. He also wrote several works on the theory of music.

CORDEBIUS, or **CORDIER**, kôr'dyâ', MATHEURIN (1479-1564). A French schoolmaster, especially skillful as a teacher of children. He taught in Paris, where he had as one of his scholars John Calvin, who dedicated to him the commentary on the *First Epistle to the Thessalonians*. Later he taught at Geneva, and died there. He wrote, besides philosophical works, a number of books for children, one of which, *Colloquium Scholasticorum Libri Quattuor ad Pueros in Latino Sermone Exercendos* (1564), appeared in numerous later editions and was translated into English and French.

CORD GRASS (*Spartina*). A genus of grasses having compound spikes, the species of which are found in wet places, many of them in salt or brackish tide marshes. The spikelets are arranged on one side and have only one perfect floret and very unequal glumes. The species are perennial, rigid, from creeping rootstocks, and have long, tough leaves; hence the name "cord grass." *Spartina stricta*, found in muddy salt marshes on the east and southeast coasts of England, and in America, although remarkable for its extreme stiffness and rigidity of habit, is used for making ropes on account of the toughness of its fibre. *Spartina cynosuroides* and *Spartina patens* are common in the United States, the former along the ocean and lake shores from Maine to the Pacific; the latter species is common in salt marshes, and this and *Juncus gerardi* furnish the best of the marsh hay. *Spartina cynosuroides* has been successfully used in the manufacture of twine and paper.

COR/DIA'NI. See SANGALLO.

CORDIER, kôr'dyâ', HENRI (1849-). A French Orientalist, born in New Orleans. He studied in France and England and in 1869-76 lived in China. He became professor of the School of Political Science in Paris in 1886, and professor of history, geography, and Eastern legislation at the School of Living Oriental Languages. He wrote on China for *La Grande Encyclopédie*. His works include *Bibliotheca Sinica*, a bibliography of the Chinese Empire (1878-95); *La France en Chine* (1882); *Recueil de voyages et de documents pour servir à l'histoire de la géographie depuis le XIIIe siècle jusqu'à la fin du XVIe siècle* (1882-85); an *Atlas sino-chinois* (1896); *Histoire des relations de la Chine avec les puissances occidentales, 1860-1902* (3 vols., 1901-02); and *L'Expedition de Chine de 1857-58* (1905).

CORDIER, MATHEURIN. See CORDEBIUS.

CORDIERE, kôr'dyâr', LA BELLE (Fr., the

beautiful ropemaker). A nickname of the poetess Louise Labé, wife of Perrin, a ropemaker.

CORDIERITE, kôr'di-êr-î-t. See IOLITE.

CORDILLERA, kôr'dil-yâ'rá. The great system of elevations that extend along or near the Pacific coast of North and South America from northern Alaska to Cape Horn. The Cordillera of North America includes the mountain ranges in Mexico, the Rocky Mountains, the Sierra Nevadas, the Coast and Cascade ranges in the United States, and the several ranges in British Columbia and Alaska. The whole western part of the continent traversed by these ranges is commonly called the "Cordilleran region." In South America the term is sometimes used as a synonym for the Andes, or the two may be united, i.e., Andean Cordillera, and is also applied to definite portions of the Andes, as in Colombia, where the three mountain ranges are known as the Eastern, Central, and Western Cordilleras. The term, originally Spanish, is used in America by geographers to signify an extensive system of elevations. See AMERICA; ANDES; ETC.

CORDITE (from *cord*, because it is made in the form of a cord instead of being granulated). A form of smokeless gunpowder used in England and some other countries. The original cordite was composed of 58 parts of nitroglycerin, 37 parts of nitrocellulose, and 5 parts of vaseline. It gave excellent ballistic results per unit of weight and volume of space occupied but it caused excessive erosion of the bore of guns using it. Moreover, at temperatures of over 90° F. there was an exudation of nitroglycerin and this could be readily detonated. These defects resulted in its condemnation. The next type devised was called Cordite, M. D., and carried less than 30 per cent of nitroglycerin, with a corresponding increase of nitrocellulose. The latest type is said to contain about 15 per cent of nitroglycerin and over 80 per cent nitrocellulose. In preparing cordite the nitrocellulose is dissolved in a solvent, incorporated with the other ingredients, and the solvent evaporated. While still in a plastic state it is pressed through holes in a plate which form it into a cord of any size desired. Cordite is very easy to handle as the charges are put up in bundles of convenient length. In its early form it required a powder chamber very much smaller than that necessary for a charge of pure nitrocellulose of equal power. When its excessive erosion was fully realized the nations using it were unable to turn at once to pure nitrocellulose as the chambers of their guns were too small. They have therefore been gradually reducing the amount of nitroglycerin and increasing the chamber capacities of their new guns so that both old and new pieces could use the same powder. Very few guns designed for the original type of cordite are now in existence except on unimportant ships. See EXPLOSIVES; SMOKELESS POWDER; GUNS, NAVAL.

CÓRDOBA, kôr'dô-bá, or **COR/DOVA**. The flourishing capital of the province of the same name in Argentina, on the Río Primero, a tributary of the Paraná, northwest by rail 246 miles from Rosario and 535 from Buenos Aires (Map: Argentina, E 10). It is situated at an elevation of about 1200 feet, and is regularly laid out and well built, except on the surrounding heights, which are inhabited mostly by the poorer classes. The city has a fine park, or

promenade, and plazas, in the principal of which is situated the cathedral, an imposing structure of composite architecture with a fine cupola, dating from the seventeenth century. A massive Jesuit church, the fine old government house, and the national observatory are worthy of mention. Among the educational institutions are the university—founded by the Jesuits in 1613, thus ranking in age next to that of Lima—a national college, two national normal schools, an episcopal seminary, and a public library. Other features of Córdoba comprise a well-equipped general hospital, asylums for orphans and the poor, etc. The city is an episcopal see. Though a part of the surrounding country is rendered fertile only by irrigation, Córdoba is an important commercial centre, owing to its geographical position. Live stock, wool, and hides are the chief exports of the vicinity, and beds of calcite are worked. The city has some industrial interests, principally manufactures of building material, lime, bricks, and flour. About 12 miles above the city a great dam stretches across the Río Primero; this insures a water supply and furnishes irrigation and power for an electric light and power plant. The population, which is increasing, was about 62,000 in 1900 and 95,000 in 1910. Córdoba was founded in 1573 by Luis Gerónimo de Cabrera. The vicinity had been visited some 30 years before by an officer of Pizarro. The town became the capital of the Spanish Intendencia of Tucumán, and rose to prominence as an educational centre and as the headquarters of the Jesuits in that region. It suffered to some extent in the revolutionary struggles. In 1871 Córdoba was the seat of the first national exposition of Argentina. The Province of Córdoba, of which the city is the capital, has an area of 62,000 square miles and a population of approximately 500,000. The atmosphere of Córdoba is scholastic, and the city, unlike other large Argentine towns, is of special interest as an academic and scientific centre. The national meteorological station here supplies the time for Argentina.

CÓRDOBA. A town of Mexico, in the State of Vera Cruz, on the railroad to the city of Mexico (Map: Mexico, L 8). It manufactures woolen and cotton goods and has a trade in sugar and coffee. It is famous for its scenic attractions. Pop., 1900, 8136; 1910, 9600.

CÓRDOBA, FRANCISCO FERNÁNDEZ DE. See FERNÁNDEZ DE CÓRDOBA, FRANCISCO.

CÓRDOBA, GONSALEO DE. See GONSALEO DE CORDOBA.

CÓRDOBA Y FIGUEROA, é fè'gà-rò'a, PEDRO DE (1692-c.1770). A Chilean historian, born at Concepción. He entered the army in 1725. In 1739 by order of President Velasco, he founded Los Angeles, the capital of Araucanía. About 1745 he wrote a history of Chile from the conquest until 1717. It has been published in the *Colección de historiadores de Chile*.

CÓRDOBA Y VALCÁRCCEL, FERNANDO FERNÁNDEZ DE. See FERNÁNDEZ DE CÓRDOBA Y VALCÁRCCEL, FERNANDO.

COR'DON (Fr. *cordon*, from *corde*, cord). A military term for a line of sentries, posted within view of each other, and designed to prevent forbidden contact or communication between one side of the line thus guarded and the other. When large separate bodies of troops are so disposed as practically to shut in a sec-

tion of country, they are spoken of as a "cordon of troops." Country inclosed by a series or system of blockhouses, as in South Africa under General Kitchener (1901), is described as "cordoned." A cordon instituted to prevent contagion from an infected place or district is a *cordon sanitaire*.

CORDON. A system of training by which a plant that is naturally diffusely branched is dwarfed to one or two stems in order to induce large fruits. Trees trained as cordons with two stems are usually carried horizontally in opposite directions about 18 inches from the ground. Single-stem cordons are carried obliquely, horizontally, or vertically, the laterals of such branches being kept spurred. Any plant which bears its fruit upon spurs will therefore lend itself to this style of training. In parts of Europe fruit trees are frequently trained, by a series of superimposed cordons, on the walls of houses or other buildings.

CORDON BLEU, kòr'dòn' blé (Fr., blue ribbon). Knights of the ancient French Order of the Saint Esprit, or Holy Ghost, were so called because the jewel of the order was suspended on a blue ribbon. In late times the term was degraded to mean a "first-rate cook." The *cordon grand* is any member of the Legion of Honor, the decoration being suspended by a ribbon.

CORDOVA. See PRINCE WILLIAM SOUND.

CORDOVA, kòr'dò-và, or CÓRDOBA, kòr'dò-bà (Lat. *Corduba*, from Phœnician *Karta-tuba*, Great City). A city of Spain and capital of the Province of Córdoba, situated on the Guadalquivir, 120 miles by rail north of Málaga (Map: Spain, C 4). It lies at an altitude exceeding 390 feet at the base of the Sierra de Córdoba. In appearance the city is less characteristically Moorish than might be supposed, its aspect being one rather of heterogeneity arising from the conglomerate architecture of various periods; it retains but few marks of the Saracen period and but faintly recalls the grandeur of the former metropolis of Mohammedan Spain. The streets are with few exceptions narrow and crooked, and the houses gloomy. The finest edifice is the cathedral, once the chief mosque of the "Infidels" and one of the most splendid examples of Moorish architecture. Together with the court, it occupies a site 570 feet by 425 feet, with a bell tower 300 feet in height. It is surrounded by a wall with strong buttresses and was originally both mosque and fortress. The interior is almost a labyrinth of pillars, for they number some 850, in various styles and mostly of marble, porphyry, and jasper. The building has suffered considerably through the changes of different epochs, made in the endeavor to convert the mosque into a Christian cathedral. A short distance from the cathedral, to the south, stands the marble triumphal column, erected 1765, of San Rafael, the patron saint of Córdoba. Among the Moorish remains are the ruined city walls, part of the Alcázar, and the old bridge of 16 arches, 730 feet long, connecting Córdoba with its suburb, Campo de la Verdad. The bridge, originally built by the Romans, was reconstructed on the same foundations by the Saracens. Córdoba contains a large number of churches and convents, a bishop's palace, a theatre, and a bull ring. The educational institutions include a lyceum, a theological seminary, a veterinary school, and a library.

Once a great centre of commerce, Córdoba is

in a state of decline. The railroad connection with Seville, Málaga, and Madrid brought in a little new life, but Córdoba is still a city of the Middle Ages. There are manufactures of leather (the celebrated "Córdovan" leather), liquors, hats, cloth, silk, and paper, besides the ancient silver-filigree industry for which Córdoba has long been famous. Iron is mined in the vicinity. Pop., 1900, 58,275; 1910, 65,160.

Córdoba is said to have been founded by the Phenicians, but was acquired 152 a.c. by the Romans. It rose to be the second city of Spain, the seat of a prætor, and a supreme tribunal. Taken by the Goths in the sixth century, it fell in 711 into the hands of the Saracens. At first it was subject to the Caliphate of Damascus, but in 756 the city became independent under 'Abderrahmán I, the founder of the dynasty of the Omayyades, whose rule continued till 1031 and embraced all Mohammedan Spain. From 912 to 961 it was the capital of the Caliphate of Córdoba, and the metropolis of Moorish Spain, rivaling in splendor the Eastern Caliphate of Bagdad. From the ninth century to the twelfth Córdoba was one of the greatest centres of commerce in the world. According to Arabian historians the city at the height of its splendor contained 200,000 houses, 1,000,000 inhabitants, 600 mosques, 80 institutions of learning, and a public library with 600,000 volumes. Such accounts are doubtless exaggerations, but certainly when all was dark over the rest of the Occidental world Córdoba held aloft the light of civilization. After the fall of the caliphate the decline was rapid: the city was taken by Ferdinand III of Castile in 1236. Córdoba was plundered by the French under Dupont in 1808. It is the birthplace of the two Senecas, the poet Lucan, and the philosopher Averroës.

COR'DOVAN, or **CORDOAM**. Originally a Spanish leather prepared from goatskins or split horsehide, and used throughout Europe during the Middle Ages for the boots of the wealthy. It was originally made by the Moors of Cordova. The modern application of the term is to a grain leather from the best and strongest portions of a horsehide and used for heavy boots, as for walking or hunting.

CORDUBA. See **CORDOVA**.

COR'DUROY (probably for Fr. *corde du roi*, king's cord). A cotton material having a cut pile like velvet, but with the surface ribbed. The gut which separates the ribs was produced by binding the pile weft to the cloth, but these ribs are now cut on the face of the fabric by a special form of knife operated at regular intervals during weaving. Cotton corduroy is woven upon a plush loom. See **FUSTIAN**.

COR'DUROY ROAD. A road built of straight logs, round or split, laid side by side across the roadway. Such roads are used in swampy ground, where they make travel, particularly in the rainy season, less difficult.

The logs are laid on a level foundation of natural soil, and placed together as close as possible to avoid big joints. They may be left loose or secured in position by two stringers, parallel to the axis of the road, which are spiked down to the logs. Sometimes the joints are filled with wooden wedges to reduce the shock to passing vehicles.

COR'DUS, **CREMUTUS**. A Roman historian, who in 25 A.D. was, according to Tacitus (*Annales*, iv, 34, 35), accused before Tiberius of having praised Cæsar's assassin, Brutus, and of

having termed Cassius the "last of the Romans." The true cause for this accusation, however, was his free expression of opinion regarding Sejanus, the influential minister of Tiberius (q.v.). Having pronounced an apology, he starved himself to death. Of his works, one of which was a history of the period 43-18 a.c., only a few fragments remain, preserved in the *Suasoria* of Seneca. Consult Rathlef, *De Cremuto Cordo* (Dorpat, 1860); H. Peter, *Die Geschichtliche Literatur über die Römische Kaiserzeit* (1897).

COR'DYLINE. See **TI**.

CORE (OF. *cor*, Fr. *cœur*, from Lat. *cor*, heart). 1. In masonry, the inner portion of any heavy part of the structure, such as pier, buttress, main wall, etc., which is not visible, but is covered with a sheathing or surface of another material. Roman buildings have a concrete or rubble core, with a facing of brick or coursed-stone construction, sometimes of marble slabs or stucco. In mediæval structures the core is sometimes of brick, often of rubble, with facing of cut stone. In modern work, especially in America, the core, or backing, is generally of brick, even in buildings externally of cut stone. Concrete is now coming into more frequent use to form the core of buildings externally faced with brick or stone. (See **MASSONRY**.) 2. The mold by which the interior of a hollow casting is shaped. 3. The cylindrical mass brought up by a hollow drill in boring through strata of earth and rock.

COREA. See **KOREA**.

COREAL, *kô'râ-il'*, FRANCISCO. Probably the pseudonym of an author who in 1722 published a book entitled *Voyage aux Indes*. According to the statements of the author, he was born in Cartagena, Spain, in 1648 and spent more than 30 years in travel, chiefly in the Caribbean region and in South America. The work passed through several editions, one of the most important of these being published in Brussels in 1736. The numerous errors which it contains and the doubts which have been cast upon its authenticity justify the belief that it was a pseudonymous publication.

CORELLI, ARCANGELO (1653-1713). An eminent Italian violinist and composer, surnamed *Il Dicino*. He was born at Fusignano, near Bologna, and studied in Rome under Bassani and Matteo Simonelli. He is said to have been in Paris in 1672 and subsequently passed several years in Germany in the service of the Elector of Bavaria. In 1681 we find him settled in Rome, where he found a generous patron in Cardinal Ottoboni, and soon acquired fame as a virtuoso, teacher, and composer. According to Georg Muffat, he is the originator of the *concerto grosso* (q.v.). He was especially admired for the beauty of his tone and expressive execution and laid the foundation for the development of superior violin technique. His compositions rank among the best of his time and continue to this day models of classical study in instrumental music. The finest and most famous among them are 12 *Concerti grossi*, op. 6. His complete works were edited by Joachim.

CORELLI, MARIE (1864-). An English novelist, whose talent runs to the romantic, sensational, and melodramatic. The adopted daughter of Charles Mackay, of English and Italian parentage, she was born in Italy and was educated in London and in France. *The*

Romance of Two Worlds and The Vendetta (1886) made her reputation, and many successes followed these two books. Secure in popular favor, she early came to regard with disdainful pity the severe literary criticism that cavalierly dismissed her from serious consideration. She made Stratford-on-Avon her home. Miss Corelli's books, all showing the real story-teller's gift, include: *Thelma* (1887); *The Sorrows of Satan* (1895); *The Mighty Atom* (1897); *The Master-Christian* (1900); *Temporal Power* (1902); *God's Good Man* (1904); *Woman or Suffragette* (1907); *Holy Orders* (1908); *The Devil's Motor* (1910); *Ziska, the Problem of a Wicked Soul* (1911); *The Strange Visitation* (1912).

CORENTYN, kō'rēn-tēn' (Dutch *Corantyn*). A river of Guiana, South America. It rises near the boundary of Brazil, flows in a northerly direction, and empties into the Atlantic. Throughout its length it forms the boundary line between British and Dutch Guiana (Map: Guiana, F 3). It is navigable for a distance of over 40 miles for large steamers, while light vessels can ascend as high as 170 miles from its mouth, where navigation is interrupted by cataracts, which occur at a number of points on its middle and upper course. Its total length is about 400 miles.

CO'REOP'SIS (Neo-Lat., from Gk. κόρυς, *koris*, bedbug + ὄψις, *opsis*, appearance). An herbaceous annual or perennial plant of the family Compositae, nearly all natives of eastern North America, and popularly known as tickseed, the fruit being in the shape of a small tick. It is often raised for its showy yellow or rose-purple flowers with yellow or brown disks. The perennials are grown in hardy borders; the annuals in the garden in almost any soil. For illustration, see Plate of CRANBERRY.

CORRESPONDENT. See DIVORCE.

COREY, WILLIAM ELLIS (1866-). An American capitalist and steel manufacturer, born in Braddock, Va., and educated at Duff's College, Pittsburgh. When 16 years old, he entered the chemical laboratory of the Edgar Thomson Steel Works, and five years later he went into the Homestead Steel Works, where, in 1889, he became superintendent of the plate mill, in 1893 superintendent of the armor-plate department, and in 1897 general manager (succeeding Charles M. Schwab). From 1901 to 1903 he was president of the Carnegie Steel Company and from the latter year to 1911 president of the United States Steel Corporation. He was one of the circle of men associated with Andrew Carnegie in the development of his great steel industries.

CORFE (kōrf) **CASTLE**. A village of Dorsetshire, England, in the middle of Purbeck Isle or Peninsula, 24 miles east-southeast of Dorchester (Map: England, D 6). In the vicinity are stone and marble quarries, and clay works for potteries. Pop. (parish), 1901, 1440; 1911, 1406. The ruins of a castle, giving the name to the village, stand on a neighboring hill. Founded in the tenth century, it was long one of the strongest fortresses in the kingdom. Here King Edward the Martyr was murdered by his stepmother, Elfrida, in 979, and King John, during his disputes with his barons, kept his regalia here for safety. In 1642 Lady Bankes defended the castle for six weeks against Charles I. It was dismantled by Fairfax in

1645. Consult T. Bond, *History and Description of Corfe Castle* (London and Bournemouth, 1883).

CORFLAM'BO. In Spenser's *Faerie Queene*, a giant representing licentiousness.

CORFU (Gk. Κόρυφα, *Korkyra*, or *Képupa*, *Kerkyra*, Lat. *Corcyra*). The most northerly of the Ionian Islands (q.v.), in lat. 39° 20' to 39° 50' N., long. 19° 40' to 20° 10' E. (Map: Greece, A 2). It has a length of about 38 miles, with a breadth varying from 3 or 4 to 20 miles. Area, 275 square miles. Pop., 1907, 99,571. Like the rest of the Ionian Islands, it is mountainous, and the mountains are generally naked and dry, the highest summit, Pantokrator, being about 3000 feet above the sea. The valleys, however, are very fertile, and yield olive oil, wine, honey, oranges, figs, etc. Salt is also produced in some quantity. The climate is generally mild and healthful. The principal town, Corfu, on the east, situated on an elevation, has some good streets and a fine esplanade. It has (1907) 28,254 inhabitants and a considerable trade. It is the seat of a Greek archbishop and of a Catholic bishop. The early history of the island is purely mythical; the later inhabitants identified it with the Homeric Scheria (Phæacia). About 734 B.C. the Corinthians are said to have colonized the island, which, however, soon attained such wealth and maritime power as to assert its independence. After the Persian wars, in which Corcyra took no part, a further dispute with Corinth led the Corcyreans to ally themselves with Athens (435 B.C.), and the intervention of the latter city was one of the factors which contributed to the outbreak of the Peloponnesian War. Internal dissensions and varying foreign control marked the history of the island until it was taken under Roman protection in 229 B.C. During the greater part of the Middle Ages it belonged to the Byzantine Empire; later, it passed into the possession of the Venetians, who held it, in spite of two fierce attacks by the Turks, until 1797. Since that time Corfu has shared the fortunes of the other Ionian Islands. At present it forms, with some minor islands, a nomarchy of Greece. Consult: Riemann, *Corfu* (Paris, 1879); Partsch, *Die Insel Korfu* (Gotha, 1887); Schmidt, *Korkyrasche Studien* (Leipzig, 1890).

CORI, kō'ri. A city in the Province of Rome, central Italy, 36 miles southeast of Rome (Map: Italy, G 6). Important to the antiquarian are the huge polygonal blocks that formed the walls of the ancient Cora—a city that was an early member of the Latin League and that had for traditional founder the Trojan Dardanus, or Coras; also the ruins of a temple of Castor and Pollux, an old bridge, the churches of Sant Olivia and San Pietro, and of a so-called temple of Hercules. Its chief trade is in tobacco, oil, and southern fruit. Pop. (commune), 1881, 6300; 1901, 6709; 1911, 7308. Consult G. B. Piranesi, *Antichità di Cora* (Rome, 1770), and A. Nibby, *Analisi della carta dei dintorni di Roma* (Rome, 1848).

CORIAN'DER (Lat. *coriandrum*, Gk. κολανθον, *koriannon*, κόριον, *korion*, coriander, possibly from κόρυς, *koris*, bedbug, referring to the smell of the leaves), *Coriandrum sativum*. An annual or biennial plant of the family Umbelliferae, with branching stem, 1 to 2 feet high, the lower leaves bipinnate, the upper leaves more compound, divided into very narrow divi-

sions, and with globose fruit. It is a native of the south of Europe and of the East and has long been cultivated for the sake of its fruit. It has thus become naturalized in some parts of England and the United States, where its fruit, coriander seed, is much less used than in Germany and some other European countries. The whole plant, when fresh, has a very offensive smell, due to an essential oil, but the ripe and perfectly dry fruit has an agreeable aromatic smell and a sweetish aromatic taste. It is used in medicine as a carminative and in domestic economy as an aromatic, being very often mixed with bread in the north of Europe; spirituous liquors are flavored with it; and confectioners cover it with sugar, to make a well-known kind of confection. In the south of England it is common to sow coriander and caraway together, the coriander yielding a crop in the first year and the caraway in years following. Coriander delights in a rich soil and is much cultivated and used in India. It is little used in the United States.

CORIGLIANO CALABRO, kō'rē-lyā'nō kālābrō. A city in the Province of Cosenza, south Italy, 4 miles from the Gulf of Taranto and 70 miles southwest of Taranto (Map. Italy, L 8). It has a castle and an aqueduct, and markets a high quality of manna from the ash trees of the surrounding country, as well as some oil. It was destroyed in 1806 by the French. Pop. (commune), 1881, 13,272; 1901, 13,320; 1911, 16,338.

CORIN. In Shakespeare's *As You Like It*, a shepherd who offers his services to Rosalind and Celina.

CORIN'NA (Gk. Κόριννα, *Korinna*). A Greek lyric poetess, nicknamed "The Fly" (Μύλα, *Myia*), famous alike for her beauty and for her genius. She was born at Tanagra, in Boeotia. She was an elder contemporary of Pindar and, according to tradition, his rival. Ælian and Suidas speak of her five victories over him, and Pausanias saw at Tanagra a picture of her wearing about her head a fillet of victory, which he supposes she gained in a contest with her younger rival. Her poems were all in the Boeotian dialect. The older fragments were edited by Bergk, *Poetae Lyrici Graeci* (Leipzig, 1900); Smyth, *Greek Metric Poets* (London, 1900). In 1907, in a papyrus of the second century A.D., were found considerable remains of two poems attributed to Corinna. Consult *The Year's Work in Classical Studies* (for 1907), and Edmonds, *New Fragments of Corinna* (1910).

CORINNA. 1. A name given by Dryden to Mrs. Elizabeth Thomas, with whom he had a correspondence. She afterward made the acquaintance of Curll, the notorious publisher, and furnished him with a selection of letters interchanged between herself and Dryden. They were probably fictitious. 2. The daughter of Gripe in Van Brugh's comedy *The Confederacy*.

CORINNE, OU L'ITALIE, kō'rēn' ou lē-tā-lē' (Fr., *Corinna, or Italy*). The most important novel of Madame de Staël, published in 1807, named from its heroine, who pines and dies after her lover proves false.

CORINTH (Gk. Κόρινθος, *Korinthos*; said to have been called in early times "Ephyra"). An ancient city of Greece, situated at the south end of the isthmus connecting the northern division of Greece with the Peloponnesus. Its citadel was the Acrocorinthus, an isolated hill 1886 feet

high, with precipitous sides, commanding one of the finest views in Greece. At the northern foot of this hill lay the city of Corinth, on a broad terrace nearly 200 feet above the level of the isthmus. In the Homeric epic *Ephyra* is mentioned as the home of Sisyphus and Bellerophon (see also ΜΕΜΕΛΑ), but the city does not seem to have played a great part in the heroic age, and appears in dependence upon the rulers of Mycenæ, with which place it was connected by a very early system of roads. Discoveries of pre-Mycenæan pottery in graves show that there was a settlement at the foot of the Acrocorinthus in very early times, but as yet few remains of the Mycæan age have come to light. The growth of the city seems to have occurred after the Dorian conquest of the Peloponnesus and to have been especially favored by the development of intercourse with the West; for this its situation with harbors on both the Corinthian and the Saronic gulfs gave it peculiar advantages, which were further enhanced by alliances with Samos and Chalcis on Eubœa, and by the building of an arrangement by which vessels could be hauled across the isthmus. By the end of the eighth century B.C. Corinth was the chief trading city of Greece, and the extent of its trade is shown by the number of Corinthian vases found in Italian graves as well as by the testimony of ancient writers. Among the colonies founded by Corinth at this period were Syracuse and Corcyra (See CORFU). The government was a strict oligarchy under the leadership of the family of the Bacchiadae, but when, early in the seventh century B.C., Corcyra successfully maintained her independence of the mother city, a revolution occurred, and Cypselus became tyrant (c.657 B.C.). Under his rule and that of his son, Periander (q.v.), the prosperity of the city increased, Corcyra and Epidaurus were reduced, and the establishment of Potidea on the northern coast of the Ægean gave Corinth a share in the rich trade of Macedon and Thrace. About 582 the tyrants were overthrown, and a moderate oligarchy established, which seems to have remained the usual form of government, though occasionally interrupted by democratic revolutions. With the other cities of Peloponnesus (except Argos), Corinth became a member of the Lacedæmonian League and played a large part in the Persian wars. The great development of Athenian power was a serious blow to the commercial interests of Corinth; accordingly we find the city active in promoting the Peloponnesian War. (See CORFU.) After the fall of Athens the Corinthians became jealous of the Spartan rule and formed an alliance with Thebes and Athens, which led in 395 to the Corinthian War. Later, Corinth returned to the Spartan alliance and supported the city in the war waged with the Thebans under Epaminondas. Three years after the battle of Cheronea (338) it was garrisoned by the Macedonians, who held it until 196, with the exception of 242-223, when it was occupied by Aratus (q.v.) for the Achæan League. When the freedom of Greece was proclaimed by the Romans, Corinth was restored to the Achæan League. Having become the centre of the last uprising of Greece against the Roman power, it was utterly destroyed (146) by L. Mummius, the Roman general, and for a whole century it continued in ruins. In 46 B.C. Julius Cæsar rebuilt it, and it afterward became the capital of the Roman Province of Achæia; al-

though it never again attained its early importance, it became both prosperous and powerful. St. Paul planted a Christian church here, to which he addressed two epistles. In 1458 A.D. it was conquered by the Turks under Mohammed II, was taken by the Venetians in 1687, and retaken by the Turks in 1715, who held it till 1823. Reduced to ashes in the Greek Revolutionary War, and again utterly destroyed by an earthquake in 1858, Corinth is now rebuilt in a more convenient position on the shore of the Gulf of Corinth. Ancient Corinth was surrounded by walls, having a circuit of about $4\frac{1}{2}$ miles, or, including the Acrocorinthus, of 8 miles. It had two harbors—*Lechæum*, on the Gulf of Corinth, and *Cenchreæ*, on the Saronic Gulf, opening into the *Ægean*. The former was connected with the city by two parallel walls. The wealth and prosperity of Corinth made it the seat of luxury and licentiousness. Besides the sea deities Poseidon and Amphitrite, Aphrodite claimed a large share in the religion of the city, and her temple alone is said to have had 1000 courtesans as sacred slaves. The Corinthian *hetæra* were famous throughout Greece. In the earlier period Corinth was noted for its work in clay and bronze, and even in later times "Corinthian bronze" was almost as precious as gold. Though devoted to art, and filled with costly paintings and statues at the time of its capture by Mummianus, the city does not occupy a prominent place in either art or literature, and but few Corinthians except Pericles and Timoleon appear among the famous names of Greece. Before 1896 the chief remains of ancient Corinth were the foundations on the Acrocorinthus and the seven columns of a very early Doric temple, probably of the time of Pericles. In 1896 excavations were begun by the American School of Classical Studies at Athens, and although few works of art or inscriptions have been found, the discoveries have furnished a sure basis for the topography of the ancient city, of which the traveler Pausanias (q.v.) gives a detailed description. The chief sites determined are the Theatre, the Fountains of Pirene and Glauce, the road to Lechæum, the Propylæa, and the Agora to which it led, and the identification of the old temple with the Temple of Apollo. The mediæval walls are still in a fair state of preservation. Consult: E. Curtius, *Peloponnesos* (Gotha, 1851-52); Wilish, *Beiträge zur inneren Geschichte des alten Korinths* (Zittau, 1887); id., *Geschichte Korinths von den Perserkriegen bis zum dreissigjährigen Frieden* (Zittau, 1896): these pamphlets contain also a bibliography of Corinthian history. The reports of the American excavations are published in the *American Journal of Archaeology* (2d series, New York, 1897 et seq.). For a popular account, consult Richardson, in the *Century Magazine* (New York, 1899) and Cooley, in *Records of the Past*, vol. i (Washington, 1902).

CORINTH, or New CORINTH. An episcopal city and seaport of Greece, situated on the north coast of the Isthmus of Corinth, $3\frac{1}{2}$ miles north-east of the ancient city (q.v.) and $1\frac{1}{2}$ miles southwest of the northern terminus of the Corinth Canal (Map: Greece, D 4), and about 55 miles west of Athens. The town was founded in 1858 after the destruction of the vestiges of old Corinth by an earthquake. It is wholly modern and has a good harbor. It has been prospering since the Corinth Ship Canal was

opened in 1893. Among its exports are oil, honey, silk, corn, and currants. It is the capital of the District of Corinth. Pop., 1896, 4188; (commune) 12,567; 1907, 5340; (commune) 14,867.

CORINTH. A city and the county seat of Alcorn Co., Miss., near the Tennessee border, 93 miles east-southeast of Memphis, Tenn., on the Southern, the Illinois Central, and the Mobile and Ohio railroads (Map: Mississippi, J 1). It contains a national cemetery, a park, and a museum. There are machine shops, and manufacturing of spokes, lumber, etc. The water works are owned by the city. Pop., 1890, 2111; 1900, 3661; 1910, 5020.

At the outbreak of the Civil War Corinth, being at the junction of the Mobile and Ohio Railroad running north and south and of the Memphis and Charleston running east and west, became a point of great strategic importance. It was fortified by the Confederates, and immediately after the battle of Shiloh (April 6, 7, 1862) General Beauregard with 50,000 men retreated thither, followed by General Halleck at the head of a force of over 100,000 men. Halleck advanced with great caution, being more than a month in covering a distance of only 23 miles, and when he approached Corinth, Beauregard, after slight skirmishes, quietly evacuated the place during the night of May 29, Halleck taking possession the following day. On Oct. 3, 4, 1862, a force of 22,000 Confederates under Generals Van Dorn and Price attempted to recapture the place, then defended by General Rosecrans with 20,000 troops. But the assailants, notwithstanding the heroic valor displayed, were repulsed with great loss. The Union loss was 315 killed, 1812 wounded, and 232 missing, while that of the Confederates (estimated) was 592 killed, nearly 2000 wounded, and 2225 prisoners.

CORINTH, GULF OF, or GULF OF LEPANTO. An arm of the Mediterranean extending from west to east through the centre of Greece and dividing the Peloponnesus from the northern mainland. The outer portion extends from the promontory of Araxus (now Kalogria) in Achæa to the narrow strait ($1\frac{1}{4}$ miles) between Rhion and Antirrhion (south and north shores): the inner portion stretches from this point to the isthmus, a distance of about 80 miles. The gulf has the appearance of an inland lake, and the scenery is remarkably attractive, since the shores show striking contrasts of rocky promontories and fertile plains, while the background is everywhere marked by lofty mountains. The narrow neck of land which separates the Gulf of Corinth from the Saronic Gulf and unites the Peloponnesus to the mainland is called the Isthmus of Corinth. (See ISTHMUS.) It is about 10 miles in length, and about 4 miles in width at its northern extremity, near Mount Geraneion. In ancient times a wall was built across the isthmus to prevent invasion from the north. On the Saronic Gulf, at the point where this wall terminated and where the Isthmian games were celebrated, is situated the modern town of Isthmia. Excavations by the French School in 1883 brought to light remains of the ancient sanctuaries and houses on a fortified hill; near by are scanty ruins of the old Stadium. The isthmus is pierced by a canal, completed in 1893. See CORINTH CANAL.

CORINTH CANAL. The construction of a canal across the Isthmus of Corinth was begun by Nero, but the undertaking proved too vast and

was abandoned. In 1881 a French company obtained a concession to construct such a canal, and in 1882 work was begun. In 1889 the work was transferred to a Greek company and was brought to completion by Matsas, a Greek engineer, in 1893. The canal, uniting the Gulf of Corinth with the Saronic Gulf, shortens the journey from the Adriatic to the Piræus by 202 miles. It is 4 miles long, 70 feet wide, and 26 feet deep. The difficulties of navigation, however, in the Corinthian and Saronic gulfs have led large steamships to prefer the longer voyage around Cape Malea. At its western extremity a new town, Poseidonia, has sprung up, and at its eastern end is the modern town of Isthmia.

CORINTHIAN ORDER. The latest developed and most elaborate of the three orders of Greek architecture. See COLUMN; ORDERS OF ARCHITECTURE.

CORINTHIANS, EPISTLES OF PAUL TO THE. The two writings in the New Testament addressed by Paul to the church at Corinth represent what remains of a larger body of correspondence between Paul and this church, which he had founded in 51 A.D. Paul left the young church of Corinth in a flourishing condition the next year (52 A.D.) and soon after, in 53, began his great missionary work in western Asia Minor with headquarters at Ephesus (Acts xix). In the meantime the church at Corinth had been visited by the eloquent Apollos (Acts xviii. 24-xix. 1) and probably by other prominent Christian evangelists. It grew rapidly in numbers and complexity of membership. Divergent views appeared, a disputatious and divisive spirit was manifested, and some members were even guilty of serious immorality.

Sometime in 55 Paul sent Titus to Corinth to ask the church there whether it would be willing to contribute to the great collection he was planning for the poor brethren in Judæa (2 Cor viii. 6, 10 f., 16 ff.; ix. 1 ff.). Titus was well received, but may have reported the case of immorality to Paul on his return. This was probably the reason why Paul wrote the letter referred to in 1 Cor. v. 9. This letter is now lost.

Somewhat later Paul sent Timothy, by a roundabout route, to Corinth (1 Cor. xvi. 10 f.), but before his arrival there a deputation from the church of Corinth had arrived at Ephesus (1 Cor. xvi. 17 f.) with a letter from the church asking advice on a number of matters. It was this letter and the information Paul received from the members of the deputation and from others (cf. 1 Cor. i. 11) that led Paul to write the long letter now known as 1 Corinthians, written before Pentecost of 55 A.D. (1 Cor. xvi. 5-8).

In this letter he deals first with the reports brought to him of the grave disorders in the church, especially the party factions, gathering around the names of certain Apostles and their workers and Christ (chaps. i-iv), the grossly immoral practices (chap. v), and the contentious spirit which resulted in bringing one another before the courts of law (chap. vi), all of which things the Apostle sternly rebuked. The letter brought by the deputation showed Paul that the church had misunderstood his earlier letter, taking him to mean that he had forbidden them all companionship with any and all persons of bad character. The practical impossibility of complying with this command they had doubtless laid before the Apostle in their letter, in view of which protest he explains that his intention was to prohibit Christian companionship with

such persons in the membership of the church (v. 9-11: "I wrote unto you in my Epistle to have no company with fornicators; not at all meaning with the fornicators of this world . . . but . . . if any man that is named a brother be a fornicator, or covetous, or an idolater, or a reviler, or a drunkard, or an extortioner, with such an one no, not to eat").

The Apostle next replies to the questions on which his advice had been asked (chaps. vii-xvi). These questions regarded marriage (chap. vii), the eating of meat offered in sacrifice to idols (chap. viii), the proprieties of public worship (chaps. xi-xiv)—chiefly as to the use of the *charismata*, or spiritual gifts (chaps. xii-xiv), the doctrine of the resurrection (chap. xv), and the collection for the saints in Jerusalem (chap. xvi)—possibly also the return of Apollos to work among them (xvi. 12).

The writing known as 2 Corinthians presents a complicated problem as to its composition and date. Strong reasons appear for viewing it as made up from two (or parts of two) separate letters of Paul to the church of Corinth written at different dates. There are passages in 2 Corinthians which make it impossible to avoid the impression that the Apostle made a visit to Corinth which is not recorded in the Book of Acts, and that he wrote more letters to the church than are distinctively preserved in the New Testament. The passages referring to the visit are the following: (ii. 1) "But I determined this for myself, that I would not come again to you with sorrow"; (xii. 21) "Lest again when I come my God should humble me before you"; (xiii. 2, 3) "I have said beforehand . . . as when I was present the second time . . . that, if I come again, I will not spare." From these it is clear that the Apostle had made a visit to Corinth which was of a sorrowful kind. This cannot possibly be the only previous visit of which we have record in the Acts—the visit in which he founded the church; since, while at that time he was discouraged regarding his gospel work in Corinth, there had been no sorrow between him and his people such as these passages necessarily imply. This inference is confirmed by the remaining passages: (xii. 14) "Behold, this is the third time I am ready to come to you"; (xiii. 1) "This is the third time I am coming to you," from which it is clear that the visit which he was about to make was, to the Apostle, his third visit to this place. The passages referring to the letter are the following: (ii. 3, 4) "Out of much affliction and anguish of heart I wrote unto you with many tears"; (vii. 8, 9-12) "For though I made you sorry with my Epistle, I do not regret it. . . . So although I wrote unto you, I wrote not for his cause that did the wrong, nor for his cause that suffered the wrong," etc., from which it is clear that the Apostle has in mind some other letter than that which we know as 1 Corinthians; since, while 1 Corinthians might be called a letter of censure, whose object was to shame its readers, it could not in any way be termed a letter of "affliction" and "anguish of heart" and "many tears."

The only reasonable explanation of these intimations is to be found in the theory that the facts were somewhat as follows: Timothy's mission (see above) had resulted disastrously. He had not quieted the disputes in the church and had noticed that even Paul's authority was set at naught. Some members were even insinuating that Paul was actuated by unworthy motives.

Timothy returned to Paul with a gloomy report, probably having left Corinth before the return of the deputation bearing 1 Corinthians. It was then that Paul decided to make the visit referred to in 2 Cor. ii. 1, xii. 21, xiii. 2, 3, which was a painful visit and, for some reason, fruitless (cf. 2 Cor. x. 10). Returning to Ephesus, he writes to the church out of the fullness of his mortification and grief a letter bearing upon his experience in this visit and upon the general situation in the church, a letter which might easily have been one "of many tears."

In such a case, however, it is quite certain that we have a portion of this painful letter preserved in the last four chapters of our second Epistle (chaps. x-xiii). The evidence for this statement lies in the following facts: 1. Between chaps. i-ix and chaps. x-xiii there is a marked and otherwise unaccountable difference in the feelings of the Apostle. The earlier chapters are full of cheer and satisfaction; the later of dissatisfaction and distress. 2. Between these two groups of chapters there is, further, a marked and otherwise unintelligible difference in the condition of the church's affairs. In the earlier chapters the church is manifestly loyal to the Apostle; in the later it is as manifestly disloyal. 3. Between these two groups of chapters there is a peculiar set of cross references. It is found in the following passages:

I. (ii. 3) "And I wrote this very thing, lest when I came, I should have sorrow from them of whom I ought to rejoice": (xiii. 10) "For this cause I write these things while absent, that I may not when present deal sharply," etc.

II. (i. 23) "But I call God for a witness upon my soul, that to spare you I forbore to come to Corinth"; (xii. 2) "I have said beforehand, and I do say beforehand . . . that, if I come again, I will not spare."

III. (ii. 9) "For to this end also did I write, that I might know the proof of you, whether ye are obedient in all things"; (x. 6) "—being in readiness to avenge all disobedience, when your obedience shall be made full."

From these passages it would appear (1) that the actions or states of feeling described in the later chapters as future are in the earlier chapters described as past, (2) that between the future references to these states and actions and the references to them that are past there had come over the situation to which they apply a change for the better. These two phenomena are rendered the more significant by the fact that the passages in the earlier chapters are all of them from a portion of the letter (i. 23-ii. 11) in which reference is made expressly to the painful letter (ii. 3, 4) and most probably to the experiences of the sorrowful visit (ii. 5-11); while two of the three passages in the later chapters are from a portion of the letter (xiii. 1-10) in which reference is made specifically to a contemplated visit which has in it the possibilities of being one of unpleasantness between the Apostle and his people.

These internal evidences are confirmed by the fact that 2 Corinthians does not seem to have been known as early in the post-Apostolic Church as 1 Corinthians. This is especially evident from the fact that Clement of Rome, in writing to the Corinthian church (95 A.D.), though there was in the situation of the church that which would have made references on his part to 2 Corinthians most apt and forceful, apparently confines all his references to the less applicable

1 Corinthians. There seems to be no allusion to it before Polycarp's letter to the Philippian church (116 A.D.); while, generally speaking, references to it by the Fathers are few and not over clear. But if 2 Corinthians was thus so much later in coming to the notice of the church, this period of obscurity would involve necessarily a harsh usage for the first copies of both the letters of which it is composed, and this may easily have resulted in a loss of the closing portion from Paul's last letter (chaps. i-ix.) and, correspondingly, of the earlier portion of his painful letter (chaps. x-xiii.). Inasmuch, however, as both these fragments, when finally discovered, gave evidence of having been written by Paul (cf. i. 1, 2, which gives the apostolic greeting in the name of Paul: "Paul an Apostle," etc., and x. 1, which presents Paul by name as the writer: "Now I, Paul, myself entreat you," etc.), and as one showed itself clearly to be the beginning, while the other as clearly showed itself to be the close, of one of his letters, it would be not at all unnatural were the two fragments placed together as one Epistle and so received generally in the church.

In view, therefore, of the facts presented in the Epistles, we recognize three visits of Paul to Corinth: (a) at the founding of the church; (b) in response to the urgency call; (c) at the close of his mission work in the East. We recognize also four letters of Paul to the church: (a) the letter of prohibition (cf. 1 Cor. v. 9); (b) the canonical 1 Corinthians; (c) the painful letter (2 Corinthians x-xiii.); (d) the canonical 2 Corinthians (chaps. i-ix.).

Together with the Epistle to the Galatians and the Epistle to the Romans, the Corinthian Epistles have been almost universally received as genuine letters of Paul. The Tübingen school (1845) made these four Epistles the standard for their criticism against the remaining New Testament writings. Recently a school of Dutch critics (1880-90) has sought to disprove their apostolic origin. Other continental critics (1875-90), while admitting their substantial genuineness, have attempted to redistribute their contents among various documents. Still other critics (1880-87) confine their efforts to the elimination of certain minor interpretations. Apart, however, from the two-epistle theory for 2 Corinthians, as advanced in this article, the letters are not only unmistakably genuine products of Paul, but are clearly integral in their contents.

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CORINTHIANS, THIRD EPISTLE TO THE.

See APOCYPHA.

CORINTO, kô-rên'tô (Sp., Corinth). A seaport in the Department of Chinandega, Nicaragua, situated on the island of Aserradores, between Realejo Bay and the Pacific (Map: Central America, D 4). It has an excellent harbor and is the chief Nicaraguan port of the west coast, having supplanted Realejo. It is the residence of a United States vice consul. Corinto was founded in 1899. Pop., 3000.

CORIOLANUS, GAIUS, or GNEUS MARCIUS. A Roman patrician. According to the legend, he was surnamed Coriolanus on account of his capture, 493 B.C., of the town of Corioli, belonging to the Volsci. Of a proud and haughty spirit, he was strongly opposed to the plebeians; on one occasion, during a time of famine, he argued in the Senate that grain which had arrived from Sicily should not be distributed gratuitously to the plebeians, unless they should give up their tribunes, an office lately instituted. For this he was impeached and banished. He took refuge among the Volscians, whom he aided in their war with the Romans. His victories at the head of his Volscian troops alarmed the Romans, who, on his approach to their city, sent a variety of deputations to plead with him. He was deaf to every entreaty. At last the noblest matrons of Rome, headed by his old mother and his wife, Volumnia, leading her two children, came to his tent. His burning desire to be revenged on those who had dishonored him was cooled by the tears of his relatives, and he led back the Volsci to their own territories, where he lived to an advanced age. To this

story numerous objections have been raised by the scientific modern historians of Rome.

CORIOIANUS. 1. A tragedy by Shakespeare, produced probably in 1609 and published in 1623. The plot is derived from *Plutarch's Lives*, and some speeches are taken verbatim from Sir Thomas North's translation of that work, published in 1579. 2. A tragedy by James Thomson, published, after his death, in 1748 or 1749.

CORIPPUS, FLAVIUS CAESCONIUS (sixth century A.D.). A Latin author, native of Africa. He wrote a panegyric on Justin the Younger, Byzantine Emperor (565-578 A.D.). Corippus was also the author of *Johannis*, an epic poem celebrating the exploits of a proconsul of that name in Africa in Justinian's time, in overthrowing the Moors. The poem, in 8 books and 5000 hexameters, is of importance for the history of Africa and for its accounts of contemporary manners and customs. For editions of Corippus' poems, consult Partsch, in *Monumenta Germaniæ Historica* (1879), and Petschenig, *Berliner Studien für klassische Philologie*, vol. iv (1886).

CORIS/CO. An island belonging to Spain, situated off the coast of Guinea, Africa, at the entrance to Corisco Bay, in lat. 0° 55' N., long. 9° 20' E. It has an area of about 5½ square miles, and its surface is very diversified. The island is densely wooded, chiefly with ebony and logwood, which, with the ivory obtained from the mainland, constitute the chief articles of trade. Pop., 1900, 1438, 1910, 845.

CORITYBA. See CURITIBA.

CORK (Oir., *Corach-Mor-Murham*, Great March of Munster). A maritime county in Munster, the southernmost and largest of the Irish counties (Map: Ireland, C 5). Area, 2890 square miles. Cork is hilly, with a great diversity of surface. The western part is rocky, mountainous, wild, and boggy; the east and south, rich, fertile, and picturesque. The Munster coal field occupies 400 square miles in the northwest section of the county, some iron is also mined; and Cork is rich in limestone and sandstone deposits. The dairy industry is extensive. The population is less than half what it was in 1850, due mainly to emigration to the United States. The capital is Cork. Pop., 1841, 858,100; 1891, 438,432; 1901, 404,611; 1911, 315,431.

CORK. A city, port, and parliamentary borough, capital of county Cork, Ireland, on the Lee, 11 miles above its discharge into the sea, and 165½ miles southwest of Dublin by rail (Map: Ireland, C 5). It stands in the centre of a picturesque valley, partly on an island, formerly a swamp, which the word "Cork," "Corroch," or "Coreagh" implies, and partly on the north and south banks of the river. Several bridges span the river to the central island. The situation is picturesque from the uneven ground, irregular streets, intersecting river, and overhanging heights. Cork is the seat of a Roman Catholic bishopric. Its finest building is the Anglican cathedral of St. Finn Barr, in Early French style, completed in 1879 on the site of the saint's seventh-century foundation. The Roman Catholic cathedral, also dedicated to St. Finn Barr, dates from 1808, but was subsequently restored. There are four monasteries and two nunneries. Notable Protestant churches, besides the cathedral, are St. Luke's, St. Nicholas, and St. Anne Shandon. The last named has a high tower of party-colored stones and a noted peal of bells; it is near the site of the Shandon

Castle, once an important stronghold. Roman Catholic churches include those of St. Patrick, St. Mary, Sts. Peter and Paul, St. Vincent de Paul, and Holy Trinity. The principal educational institution is University College, founded as Queen's College in 1849; it was rechartered under its present name in 1908. It occupies a fine building, in Tudor style, on the site of a seventh-century abbey. There are a school of science (1885), an agricultural school, and various parochial and industrial schools. Besides the public library (1790), there are several private collections of importance. There is a public park of 240 acres, with a well-known race course. There is also a handsome public cemetery. The banks of the Lee, above and below Cork, are studded with villas. The estuary contains several islets rising abruptly from the water, with narrow channels between them. It is a landlocked basin, having an entrance one mile in width, which is defended by batteries on Spike, Haulbowline, and Rocky islands, which are also occupied by a convict prison, government repairing dock, ordnance depots, and artillery barracks. On the shores of the estuary are the towns of Passage and Queenstown, formerly Cove of Cork. The Lee is navigable for a considerable distance above the city, and on the improvement of navigation the harbor commissioners have expended large sums. The harbor, formed by the Lee estuary, is noted for its size and safety and has been the main source of the rise and progress of the city. It has dry docks and patent slips. It has a large export and import trade, but of a fluctuating and latterly declining character. The chief manufactures of the city are leather, metallic goods, woolen and linen goods, beer and whisky. The United States is represented by a consul. Founded in 822 by St. Finn Barr, during the ninth century Cork was frequently devastated by the Danes, who early in the eleventh century made it a trading station and built the city walls. Desmond Macarthy, King of Munster, surrendered it to Henry II in 1172. During the Civil War it held out for the King and was taken by Cromwell in 1649. In 1690 it was again besieged and taken by Marlborough. Pop., 1901, 76,122; parliamentary borough, 100,022; in 1911, 76,673. parliamentary borough, 102,274. The great majority of the inhabitants are Roman Catholics. Cork returns two members to Parliament. Consult Cusack, *History of the City and County of Cork* (Dublin, 1875).

CORK (Sp. *corko*, cork, from Lat. *cortex*, bark). The unusually developed epiphleum (see BARK) of the bark of the cork tree, or cork oak (*Quercus suber*), the *alcornoque* of the Spaniards, a species of oak (q.v.), a native of southern Europe and northern Africa. Theophrastus, in bk. ii of his *Historia Plantarum*, speaks of the cork tree as a native of the Pyrenees, and Plutarch mentions cork jackets, or life preservers. Spain and Portugal chiefly supply the world with cork, while in addition Algeria and Tunis, southern France and Corsica, and Italy, including Sardinia and Sicily, are also sources of supply. Some parts of the United States have been deemed favorable for the culture of the cork tree, and attempts in this direction were made in 1858, but were not vigorously prosecuted.

Seventy per cent of the world's cork is produced in Spain and Portugal. The cork production of Spain during 1912 was, approximately, 78,000 tons, of which 54,780 tons came from

the Seville district, 12,650 tons from Catalonia and Castellon, 7100 tons from Galicia, and 3460 tons from the two Castile provinces. While the finest cork is grown in various parts of the provinces of Seville, Badajoz, Caceres, Cadiz, Huelva, Córdoba, Gerona, Barcelona, Castellon, Ciudad Real, Toledo, Malaga, and Salamanca, the greatest part of the finest supplies, however, is grown near Barcelona. Most of the low-grade cork is produced in Seville. The total number of cork factories in Spain was 892, distributed through 107 towns, and these produced for export 8964 tons of cork, 746 tons of small squares, 583 tons of other manufactured cork, and 50,198 tons of cork wood and cork waste. About 5500 tons of cork sawdust are used in Spain annually in packing fruit for shipment. Some 40,000 persons were employed in some manner in the cork industry in Spain, with an average wage of about 67 cents per day. Planted trees are said to be inferior to the natural forests. The cork tree is not of great size, generally 20 to 40 feet high, with ovate-oblong evergreen leaves, which are sometimes entire and sometimes sharply serrated. It lives to a great age, in some instances 300 or 400 years, and is as much as 15 feet in circumference. It blossoms in April or May; the fruit ripens from September to January, falling on the ground as soon as ripe. The acorns are edible and in taste resemble chestnuts. The bark in trees or branches from three to five years old acquires a rough appearance, new layers of cellular tissue being formed, and the outer parts cracking from distension until they are finally thrown off in large flakes, when a new formation of the same kind takes place.

Cork intended for the market is generally stripped off a year or two before it would naturally come away, or when, according to the Spanish regulations, it measures 40 c.m. (15 inches) in circumference. This first, or virgin, cork is taken off when the tree is about 20 years old and has little commercial value. The process is repeated at intervals of about nine years, according to the vigor of the tree. The removal of the cork does not require the removal of the whole bark, but only of external layers of spongy cellular tissue, all or the greater part of which has ceased to have any true vitality and has become an incumbrance to the trees. Consequently, instead of being injurious, the taking of the bark, when done with proper care, rather promotes the health of the tree, which yields its best bark at about the age of 40 years and continues to yield crops for 150 years or more. In stripping off the cork longitudinal and transverse incisions are made to the proper depth, and each piece is then cut away from the tree. The average yield for one tree is about 45 pounds, although as much as 500 pounds may be secured. The slabs, after drying for a few days, are placed in boiling water for one hour. This process enables the useless outer coating of the slabs to be scraped off and increases their bulk one-fourth and also their elasticity, besides dissolving the tannin and other substances. Steam is sometimes employed instead of hot water. The cork is then scraped either by hand or by scraping machines, in which process it loses from 20 to 30 per cent of its weight. The cork is then cut crosswise into strips of the proper length, then lengthwise, and finally into pieces of the proper shape; or the strips of a given quality may be shipped direct

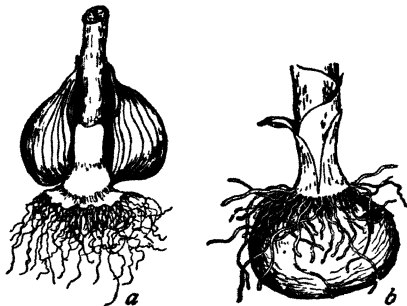
to the point of manufacture. In many Spanish districts the manufacturing industry is carried on in the homes by hand, but there are also cork-cutting machines, especially in the United States, of great efficiency, which handle the strips imported in bales. The United States in 1913 imported unmanufactured cork valued at \$3,152,670 and manufactures of cork valued at \$2,350,684. The cork, after being cut, is washed in oxalic salt, or some other solution, and then dried. It is now ready to be sorted and packed for the market. In Spain the corks, after being sliced and cut, are packed in lots of 30,000 in bagging cloth and called bales.

Besides its use for stopping bottles, casks, etc., cork is largely used, on account of its lightness, for floats of nets, swimming belts, etc.; and, on account of its impermeability to water, and its being a slow conductor of heat, inner soles of shoes are made of it. All these uses are mentioned by Pliny; but the general employment of corks for glass bottles appears to date only from the fifteenth century. It is also used for smokers' mouthpieces and many other modern devices. The bits that are left in the process of manufacture are ground to powder and used in the manufacture of linoleum, for the loose filling of refrigerators or other heat insulation, and for many other purposes. The Spanish black used by painters is made by burning cork in close vessels.

CORK, EARLS OF. See BOYLE.

CORLEONE, kôr'lâ-ô'nâ (It., lion heart). A city in the Province of Palermo, Sicily, situated 1950 feet above the sea, at the foot of Mount Cardellia and 21 miles south of Palermo (Map: Italy, H 10). Little industry of any kind is carried on, but Corleone has a splendid old church (restored). The ancient Korlium was founded by the Saracens and colonized with Lombards by Frederick II in 1237. Pop. (commune), 1881, 15,686; 1901, 14,803; 1911, 19,072.

CORLISS, GEORGE HENRY (1817-88). An American engineer and inventor, born at Easton, N. Y. In 1844 he removed to Providence, R. I., where he engaged in the manufacture of steam engines and in 1848 established the Corliss Steam Engine Company. He made and patented many improvements in steam engines and in 1876 furnished the "Corliss engine" of 1400 horse power to Machinery Hall in the Philadelphia Centennial Exhibition.



CORMS.

a, Colchicum; b, Arisema (Indian turnip).

CORM (Gk. κορμός, *kormos*, the trunk of a tree, with boughs lopped off, from *kelpes*, *keirein*,

Lith. *skirti*, OHG. *scorran*, Ger. *schern*, Icel. *skera*, AS. *scorran*, Eng. *skear*). A compact subterranean stem which is related both to tubers and bulbs. It is very short and fleshy, usually more or less rounded or depressed, and in this feature is related to the tuber. It is related to the bulb, however, by the fact that this short and compact fleshy stem is invested by thin scale leaves. Corms are sometimes spoken of as "root bulbs," and in popular usage are constantly spoken of as "bulbs." Common illustrations are found in the Indian turnip, crocus, gladiolus, cyclamen, etc.

CORMENIN, kôr'me-nân', LOUIS MARIE DE LA HAYE, VICOMTE DE (1788-1868). A French jurist and politician, born in Paris. He was educated for the law, and as auditor of the Council of State, after 1810, drew up several of the Council's most important reports. He was a deputy from 1828 to 1846. His extensive knowledge of jurisprudence and of the practical affairs of government, and the clear and logical force with which he presented his ideas, soon secured for him great influence in public affairs. His famous *Lettres sur la liste civile* began to appear in 1831 and passed through 25 editions within 10 years. He was elected to the National Assembly in 1848, was made president of the commission appointed to remodel the constitution, and strongly advocated universal suffrage. Although he had opposed the admission of Louis Napoleon to the National Assembly, and afterward had protested against the coup d'état, he was appointed, in 1852, a member of the reconstituted Council of State. In 1855 he was elected a member of the Institute. Besides his numerous political pamphlets, published under the pseudonym of "Timon" and subsequently collected as *Pamphlets de Timon* (1848)—all models of political satire—Cormenin wrote *Etudes sur les orateurs parlementaires* (1838), which passed through nearly 20 editions, and a valuable *Droit administratif* (1822), summing up French administrative law in aphorisms.

CORMON, kôr'môn', FERNAND properly Fernand Piestre (1845-). A French decorative, figure, and portrait painter. He was born in Paris, and studied under Cabanel at the Ecole des Beaux-Arts, then in Brussels under Portaels, and finally under Fromentin and Bussion in Paris. He exhibited constantly in the Salon after 1868 and was made a member of the Institute in 1898. Many of his works are of an archaeological character, the most important of these being a series of 10 mural paintings and a ceiling in the Natural History Museum, Paris (1898), some of the cartoons of which were exhibited at the St. Louis Exposition in 1904. They represent prehistoric men and animals and the development of the human race, are excellent in design, and show deep scientific knowledge. He came to enjoy high reputation as an instructor and met success also in painting portraits, which include those of President Loubet (Luxembourg), Gérôme, and Carrier-Belleuse. Other important works are: "Cain" (1880, Luxembourg); "The Victors of Salamis" (1887, Rouen), and "The Roman Legion" (1909, Leipzig).

CORMONT, kôr'môn', THOMAS and REYNAUD DE. Father and son; French architects of the thirteenth century; prominent among the builders of the cathedral of Amiens, following Robert de Luzarches (1223-69).

CORMONTAIGNE, kôr'môn'hî'ny', LOUIS DE (c.1695-1752). A French military engineer, who took part in some of the most important sieges in the War of the Polish Succession and that of the Austrian Succession. He had charge of the line of fortification from Calais to the Rhône, and he built new defenses at Strassburg, Metz, and Thionville. His improvements of Vauban's system of fortification are embodied in his *Architecture militaire, par un officier de distinction* (1741). For his biography, see Von Brese-Winiari, *Ueber Entstehen, der neueren Befestigungsmethode* (Berlin, 1844).

COR/MORAN. A Cornish giant in the story of Jack the Giant-Killer.

COR/MORANT (Fr. *cormoran*, It. *corvo marino*, from *corvo*, crow, and *marino*, marine; cf. Bret. *morvan*, cormorant, from *mor*, Lat. *mare*, sea + *bran*, crow). A group of web-footed birds comprising the steganopode family Phalacrocoracidae, characterized especially by a bare dilatable membrane beneath the lower mandible, but not in the form of a sac under the throat as in the pelicans; a compressed bill, rounded above, and with a strong hook at the point of the upper mandible; the nostrils linear and seemingly impervious to air, the claw of the middle toe serrated, used in trimming the plumage; the wings of moderate length; the tail rounded, the feathers stiff and rigid and used to aid in walking or climbing. The species are distributed over the coasts of most parts of the world, some of them ascending rivers and even visiting freshwater lakes in pursuit of fish, on which all of these birds subsist exclusively.

Cormorants are proverbially voracious. They do not take their prey by diving, when on the wing, but pursue it by swimming and diving, using their wings in progress under water, and sometimes descending to a great depth; a British species has been caught in a crab pot fastened 120 feet under water. When the prey has been taken in a manner inconvenient for swallowing, they toss it in the air and adroitly catch it as it descends. The behavior of cormorants in fishing and towards each other in their colonies has been described at length by E. Selous in *Bird Watching* (London, 1901). Some of the species frequent high rocks, others low islands, on which they make rude nests, chiefly of seaweed and almost always in colonies; some perch and even build their nests on mangroves and other seaside trees. Their greenish-blue eggs are covered with a calcareous incrustation. The flesh of all the species is dark and of a fishy taste, but is sometimes used as food, particularly that of young birds.

There are described about 25 well-defined species, of which seven are found in North America. The commonest is the double-crested cormorant (*Phalacrocorax auritus*, or *dilophus*), so called from the lateral crest of curly feathers on the sides of the head, and present in some one of its four subspecific forms throughout North America. The "common" cormorant (*Phalacrocorax carbo*) occurs abundantly on both sides of the Atlantic, especially northward, while on the Pacific coast three species are numerous—the tufted, or Brandt's cormorant (*Phalacrocorax penicillatus*), the red-faced cormorant (*Phalacrocorax bicristatus*, or *urile*), and the violet-green cormorant (*Phalacrocorax pelagicus*, or *violaceus*); the two latter are especially characteristic of Alaska. The British species are the "common" cormorant, which is about 33

inches long and almost of a black color, but during the breeding season exhibits a sprinkling of elongated white and almost bristly feathers on the head and back of the neck; and the green cormorant, or "shag" (*Phalacrocorax graculus*), which is smaller and dark green. Two notable species are Pallas's cormorant, now extinct (see EXTINCT ANIMALS), and Harris's, the surf-fishing, flightless species of the Galapagos Islands, which is exceedingly rare, of great size, and has wings useful only as fins. See FLIGHTLESS BIRDS.

Fishing with cormorants is a very ancient practice, still regularly followed among the Chinese and Japanese and lately revived as a sport in Great Britain. The birds are taken from the nest when young and are easily tamed and trained, or old cormorants may be trapped and taught to serve. They are kept for a while and fed meat, etc., until accustomed to their master and the feeding methods. Then a line is fastened to one leg by a leather anklet, and they are taken out in a boat to fish and drawn in after each capture. After a time they may be set free. A ring or strap collar is fastened about their necks, so that no fish can be swallowed, but only pouched, and they return to the boat to be relieved of their burden. After a suitable time the ring is removed, and they are allowed to fish for themselves or are fed. These birds make a living for many families on the Chinese coast, and well-trained ones are highly valued. The modern use of cormorants in this way in England was described and illustrated in *The Field* (London, October, 1890). See PLATE OF FISHING BIRDS and Colored Plate with WATER BIRDS.

CORN (Lat. *cornu*, horn; connected with Ir. Welsh *corn*, Gk. *káporn*, *karnon*, Goth. *haurn*, AS., Eng., OHG. *horn*, Ger. *Horn*, also with Gk. *képas*, *keras*, Skt. *srāga*, horn). A small hard growth resulting from an increase in the thickness of the cuticle or epidermis, which is generally caused by irritation, excessive pressure or friction on the part. Corns occur most commonly on the toes, as a result of tight shoes. Three varieties of corns are described, viz., 1. Laminated corns, or callosities, in which the hardened cuticle is arranged in layers, frequently of a dark brown color, from the effusion of blood in the deeper layers. 2. Fibrous corns (*clavi*), which are not only fibrous in their early stages, but have convex surfaces and, as time goes on, sink into the skin, sometimes producing great pain. Frequently a bursa, or small bag containing serum, is formed beneath, and if this should inflame, pus speedily forms, and the pain and constitutional irritation become severe, at other times the pressure may cause absorption of the ends of bones, and serious alterations in the condition of a joint. 3. Soft corns occur between the toes and cause much annoyance; they are generally small, and as they are constantly bathed in perspiration, the cuticle does not harden, as in the other varieties. They sometimes give rise to painful ulcerations and should never be neglected. The treatment of corns consists in the removal of all undue pressure or friction, either by removing the shoe altogether, or protecting the corn by surrounding it with a ring of felt or "corn plaster"; or the hardened cuticle may be softened by the application of water of ammonia and then scraped or filed away; or it may be extracted by using a dull instrument. A soft corn should be treated

by putting small rings of absorbent cotton around it and between the toes, and keeping it dry till it becomes a hard corn, and then treating it as such. Most druggists keep a "corn cure" composed of salicylic acid dissolved in collodion, several applications of which will remove a hard corn. In all serious cases application should be made to a surgeon or chiropodist.

Corns affect horses as well as man. In the foot of the horse they occur in the angle between the bars and outer crust and are caused by a bruise of the sensitive secreting sole. Two forms of feet are especially subject to them—those with deep, narrow, slanting heels, in which the sensitive sole becomes squeezed between the doubled-up crust and the shoe; and wide, flat feet, which, by the senseless cutting away of the bars and outer crust, allow the delicate interior parts to be pressed with all the force of the animal's weight on the unyielding iron shoe. Serum and blood are poured out, while the secreting parts, being weak and irritable, produce a soft, scaly, unhealthy horn. Corns constitute unsoundness; cause a short, careful, tripping gait; are a very frequent source of lameness among roadsters; abound in badly shod horses, especially those with the kind of feet alluded to, and usually occur in the inside heels of the forefeet, these being more especially subjected to weight and hence to pressure. The discolored spot indicating the recent corn must be carefully cut into with a fine drawing-knife, any serum or blood being thus allowed free vent. If the bruise has been extensive, a poultice will have the twofold effect of allaying irritation and relieving the sensitive parts by softening the hard, unyielding horn. When the injury has been of long standing, and soft faulty horn is secreted, a drop of diluted nitric acid may be applied. On no account must the bars or outer crust be removed, they are required for bearing weight, which may be further kept off the injured part by the use of a bar shoe. In horses subject to corns the feet should be kept soft by dressing with tar and oil, or any suitable emollient, the corn should be pared out every fortnight; a shoe with a wide web on the inside quarter should be used, and should be nailed only on the outside; and, if the sole is thin and weak, leather pads should be employed. In bad cases the shoes may be removed and the horses turned out to pasture for a few weeks with good results.

CORN, INDIAN. See MAIZE.

CORNARO, kôr-nâr'ô, CATERINA (1454-1510). Queen of Cyprus. She was born in Venice, of a patrician family. She was married to James II, of Lusignan, King of Cyprus, in 1472, and succeeded him on his death, only eight months later. When her son had also died, in 1475, the Republic of Venice assumed the government, and in 1489, fearing the conclusion of a marriage between her and Alfonso, the hereditary Prince of Naples, forced her to abdicate and leave the island. She was received in Venice with great pomp and thereafter resided at Castle Asolo, near Bassano. Caterina has been the favorite subject of romances and the heroine of several operas. Of her life in Venice her cousin, Cardinal Pietro Bembo, has left a vivid description in *Gli Asolani*. There is a famous portrait of this Queen by Titian in the Uffizi gallery in Florence. Consult Hare, *Most Illustrious Ladies of the Italian Renaissance* (New York, 1904) and McCurdy, *Essays in Fresco* (London, 1912).

CORNARO, LODOVICO, or LUIGI (1467-1566). A Venetian nobleman and hygienist. Up to his fortieth year he so wasted his forces, originally but feeble, in dissipations of every kind that his life was despaired of. He thereupon adopted strict rules of frugality in eating and drinking, with general care of his health and gentle exercises, and in consequence lived for almost a century. To promote those habits which had proved so advantageous in his own case, he wrote, in his eighty-third year, his celebrated treatise, *Discorsi della vita sobria* ('Essay on Temperate Living'), which was first published at Padua in 1558 and has been translated into many European languages. The work is mentioned with approval by Addison in No. 195 of *the Spectator*. There is a translation, *The Art of Living Long* (Milwaukee, 1903).

CORN'BURY, EDWARD HYDE, LORD, third EARL OF CLARENDON (1661-1723). An English politician, Governor of the colonies of New York and New Jersey from 1702 to 1708. He was a member of Parliament for Wiltshire from 1685 to 1695, and for Christchurch from 1695 to 1701, and in September, 1701, was appointed Governor of the Province of New York by King William, to whose side he had treacherously deserted in 1688, from that of his uncle, James II. He reached New York in May, 1702, was confirmed in his office by his cousin, Queen Anne, on the death of King William, and later in the year was also appointed first royal Governor of New Jersey. In both New York and New Jersey his arbitrary policy, his religious intolerance, his administrative incapacity, and his dissolute habits soon made him extremely unpopular, while in New York the dislike of the people was considerably intensified by his fraudulent appropriation of public funds and his attempts to override the Legislature, which insisted on its right to appoint a treasurer of its own for the "receipt and disbursement of any moneys the Legislature might order to be raised for public purposes," and contended that "the Assembly as representatives of the people of this province are entitled to the same privileges and have a right to the same powers and authorities as the House of Commons enjoy." Finally, as a result of lists of grievances passed by the legislatures of both colonies, Cornbury was removed from office in 1708 and was immediately thrown into prison in New York by his creditors; but, on his becoming third Earl of Clarendon by the death of his father in 1709, he was enabled to pay off his debts and returned to England. He became a Privy Councillor in 1711 and was Envoy Extraordinary to Holland in 1714. During his term as Governor of New York and New Jersey, he was fond of appearing in public dressed as a woman, and Lewis Morris, a contemporary, wrote: "He dresses publicly in women's clothes every day and puts a stop to all public business while he is pleasing himself with that peculiar but detestable maggot." William Smith, in his *History of the Late Province of New York* (New York, 1829-30), speaks of him as follows: "We never had a governor so universally detested, nor one who so richly deserves the public abhorrence. In spite of his noble descent, his behavior was trifling, mean, and extravagant. The indignation of the people was kindled by his despotic rule, savage bigotry, insatiable avarice, and injustice not only to the public, but even his private creditors." Consult Wilson, *Memorial History of the City of*

New York, vol. ii (New York, 1891-93), and Gordon, *A History of New Jersey* (Trenton, 1834).

CORN COCKLE. See **COCKLE.**

CORN-CRACKER STATE. Kentucky. See **STATES, POPULAR NAMES OF.**

CORNCRAKE. See **CRAKE.**

CORNEA, kôr'né-â (Neo-Lat., fem. of Lat. *cornuus*, horny, from *cornu*, horn; so called from its resemblance to horn). The transparent anterior portion of the outer coat of the eye. It contains no blood vessels and obtains its nutrition by means of a system of spaces filled with lymph. The cornea is subject to inflammation, known as *keratitis*; ulcer of the cornea is very common, resulting most often from injury, inflammations of the conjunctiva, phlyctenular keratitis, various disturbances in nutrition, etc. A number of forms are seen attacking different portions of the cornea. Aside from inflammation of other portions of the eye accompanying the ulceration, there may result adhesion and prolapse of the iris, closure of the pupil, and opacity of a portion or the whole cornea. *Staphyloma* (q.v.), a protrusion of a part or the whole of the cornea, may follow. *Keratoconus* occasionally occurs in young adults, especially females; the cornea protrudes at the centre from weakness and intraocular pressure. See **EYE; EYE, DISEASES OF THE.**

CORNEILLE, kôr'nâ'y, PIERRE (1606-84). One of the greatest tragic poets of France. He was born at Rouen, June 6, 1606, the son of a lawyer and magistrate of worth, ennobled in 1637. He was trained by the Jesuits, took the advocate's oaths in 1624, and held minor legal offices until 1650. His first play, *Mélite*, presented in Paris (1629), was popular and was followed by *Citandre* (1632), a tragi-comedy; *La veuve* (1633), his first comedy; *La galerie du palais* (1633) and *La suivante* (1634), both comedies. These early plays are full of the insipid love in fashion at the time, and the title of one of them will suffice alone to show their realism. In 1634 he met Richelieu, composed a Latin elegy on his visit to Rouen, and was enrolled among the five poets of the Cardinal statesman, of whom Rotrou alone was at all worthy of his company. He soon incurred Richelieu's displeasure for too frank criticism of his literary work and wrote, uninfluenced by the Minister's favor, *La Place Royale, Médée*, his first tragedy (both 1635), and *L'illusion comique* (1636). But all this earlier work was completely eclipsed by the triumph of his epoch-making *Cid* (1636), though we may not leave these earlier dramas without recording that they are far superior to anything that had preceded them in vigor and in truth to nature, and that to them we owe the happy invention of the soubrette. Such promise as they gave, however, pointed less to the field of Corneille's great achievement than to the drama of intrigue and to the comedy of contemporary society, for some of them are full of rather coarse stage business and a battledore and shuttlecock repartee, and are written in a style that he felt needed apology for its familiar simplicity. Still, we must admit that in them Corneille created the comedy of manners as well as the beginnings of character comedy.

The tragi-comedy of *Le Cid* was so different from Corneille's earlier dramas that it hardly seems the work of the same hand. It gave him a preëminence over contemporaries and prede-

cessors, questioned only by interested rivals and the Academy, which Richelieu summoned to support them, and which it did with studied half-heartedness. Among the conservative critics passion ran as high as in the famous battle over Hugo's *Hernani*. Scudéry, a critic of repute, asserted that *Le Cid*'s subject was ill chosen, its structure unpardonable, its action clumsy, its versification bad, and that its undeniable beauties were stolen from a Spanish play by Guillen de Castro, which was indeed its acknowledged source. But the public spoke with no uncertain voice, and though *Le Cid* may lack the ethical depth and tragic force of some of Corneille's later dramas, it was and has remained the most popular on the stage of them all. Modern French drama dates from *Le Cid*.

In the controversy that raged around *Le Cid* Corneille's position was delicate. He was not by nature a tactful disputant, being indeed inclined to arrogance, as he showed on this occasion by his *Excuse à l'Artiste*; he could not afford to lose the favor that Richelieu continued to show him, and he could not secure a full hearing without imperiling it. He therefore withdrew for three years to Rouen. When he returned in 1639 to Paris, it was with a matured genius that almost immediately asserted itself in unparalleled splendor and fecundity. Yet the theme of *Le Cid*, the struggle between honor and love in the hero, between duty and love in the heroine, remains typical of the later tragedies. Typical of them all are also the five acts and the three "unities": the time limited to 24 hours, the scene to a single town, and the action to a central interest—self-imposed fetters worn with even greater complacency by Racine. The Spaniards knew nothing of these unities, and the effort to force their romantic drama into this rigid mold had, by the improbabilities, material and psychic, that it involved, given occasion for most of the criticism that had befallen *Le Cid*. Corneille therefore, in 1639, turned to classical subjects that would lend themselves more readily to the episodic treatment which the unities demanded. What survived of romance in him was the invariable intermingling of love with sterner themes.

Horace (1640) sets the love of man and woman against the love of race and fatherland in fourfold treatment of a single theme. In the more modern *Cinna* passion twists love of fatherland to its purpose and is opposed at once to the magnanimity and the patriotism of Augustus. *Polyeucte* (1642) opposes Christian to marital duty in a story of Christian martyrdom, which was a bold venture, for many thought, with Boileau, that the mysteries of the faith should be kept out of literature. These three, with *Le Cid*, mark the height of Corneille's achievement—the climax of the development of the elements of love and will—save that he touches for a moment a greater intensity of terror in *Rodogune* (1646). The other tragedies are more or less pale imitations of the merits of these. Among them it is worth while to name: *La mort de Pompée* (1643), which is but a series of dialogues and narratives; *Théodore* (1645), an even more dubious venture in Christian martyrdom than *Polyeucte* had been; *Héraclius* (1647), followed by Corneille's election to the Academy; *Nicomède* (1651); *Pertharite* (1652). The last was an unmistakable failure which led Corneille for a time to withdraw altogether from the stage.

During these years he had written also two comedies on Spanish models, *Le menteur*, the best comedy written in France before Molière, and *Suite du menteur* (1644-45), and a good tragi-comedy, *Don Sanche d'Aragon* (1650), which, as the name implies, was Spanish also.

Disappointed by the failure of *Pertharite*, Corneille withdrew to Rouen, where he lived from 1652 to 1659, and turned his talent to versifying Thomas à Kempis's *Imitation of Christ* (1656), and to the writing of very frank critical essays on his own plays and the drama in general. He was recalled from this by a visit of Molière's company to Rouen in 1658, and between 1659 and 1674 wrote 11 tragedies of unequal mediocrity, though in each of them there were verses "with necks in thunder clothed and long resounding pace," such as he alone has known the art to create. The time to regret had passed, the time to cry halt had come, when Boileau wrote his famous epigram, *Après Agélas hélas* (1666); *Mais après Attila hold* (1667). A new conception of dramatic art had been introduced by Boileau and Racine, and when Corneille was beguiled into a contest for court favor, he was fated to see his young rival's *Bérénice* preferred to his *Tite et Bérénice* (1670). Other plays of this period are: *Œdipe* (1659); *La toison d'or* (1660); *Sertorius* (1662); *Sophonisbe* (1663), after which he received an irregularly paid pension of 2000 livres, *Othon* (1664); *Psyché* (1671), in collaboration with Molière and Quinault; *Pulchérie* (1672); and *Suréna* (1674). He had written some devotional poetry between 1665 and 1670, and among his last compositions were some beautiful verses of thanks addressed to Louis XIV in 1676. Corneille's last years were passed in pecuniary straits, "satiated with glory and hungry for money," as he said, and when, at the urgent request of Boileau, the King sent him 200 pistoles, it was already too late. He had no time to spend them, and two days after he was dead (Oct. 1, 1684).

Corneille's works show him, as his friends describe and as his portraits paint him, a man of serious, rugged, and almost stern temper. A pious churchman, he was ill at ease in society, and awkward and unsuccessful when he attempted to flatter. The only touches of romantic sentiment revealed in his verses are found in those addressed to an actress of Molière's company, Mlle. du Parc, who scorned his attentions. Whether from pride or shyness, he never curried favor, nor took his place with courtiers at a time when this was almost necessary to literary prosperity. His public manners were not gracious, though he was an affectionate husband and brother. His best work never lost popular favor, and the most eminent of his literary contemporaries always did him justice. The greatest of them, Molière, spoke of him as his master, and Racine pronounced at the Academy a eulogy on his rival at once just and generous, that later critics have in the main confirmed.

The first impression made by an attentive reading of Corneille's work is its remarkable unevenness. Judged by his best, he ranks with the greatest. No dramatic poet rises to grander heights. Hence no poet is more quotable and few more quoted, for he has hundreds of lines that cling to the memory by their crash of sound and startling fullness of suggestion—"the most beautiful," says the French critic

Faguet, "that ever fell from a French pen." And the same critic says of Corneille's language that it is "the most masculine, energetic, at once sober and full, that was ever spoken in France."

Corneille's tragedies arouse admiration rather than tragic fear. His interest is not in the fate of his characters, but in the unconquerable mind with which they meet it, their haughty disdain of destiny. He is of the school of the emphatics, delighting in extraordinary situations and subjects, in whatever will challenge the will to its utmost utterance. There is no fine-spun sentiment even in the love of *Le Cid*. But tragedy with the limitations of the "unities" involves much talk and little action, and Corneille's disdain of the endless subject of talk allows the interest to flag for scenes and even acts. There is monotony even in his nobility, and that in spite of the lyric and epic elements which he found in the drama and from which Racine was to free it. Yet his declamations—the tirades of Camilla, Augustus, Cornelia, and many another—are supreme in their kind and will thrill audiences as long as the antinomies of love and patriotism, honor and duty, perplex men's souls.

The best edition of Corneille is Marty-Laveaux's (12 vols., 1862-68). For bibliography, consult Picot's *Bibliographie Cornélienne* (1895), and Le Verdier and Pelay. *Additions à la Bibliographie Cornélienne* (1908). The best translated biography is Guizot's *Corneille and his Times* (1857); a good modern study, Faguet's "Corneille" (Paris, 1886), in the series *Classiques Populaires*. *Le Cid*, *Horace*, and *Polycrate* have been done into English blank verse by Nokes, and (with *Cinna*) into English prose by Morgan and McKee (1878-86). Consult: Sainte-Beuve, *Nouveaux lundis*, vol. vii (Paris, 1863-72); Guizot, *Corneille et son temps* (7th ed., ib., 1880); Lemaitre, *Corneille et la poésie d'Aristote* (ib., 1888); Liéby, *Corneille* (ib., 1892); Brunetière, *Époques du théâtre français* (ib., 1892); Lanson, *Corneille* (ib., 1898); Segall, *Corneille and the Spanish Drama* (New York, 1902); Huszar, *Pierre Corneille et le théâtre espagnol* (Paris, 1903); Canfield, *Corneille and Racine in England* (New York, 1904); Faguet, *Propos de Théâtre* (3 vols., 1903-06); Raab, *Pierre Corneille in deutschen Übersetzungen* (Heidelberg, 1911); Wendt, *Pierre Corneille und Jean Rotrou* (Leipzig, 1911). The three-hundredth anniversary of the poet's birth was celebrated with prolonged festivities in May and June, 1906.

CORNEILLE, THOMAS (1625-1709). A French dramatist and miscellaneous writer, whose productions are obscured by the genius of his older brother Pierre. He was born at Rouen, Aug. 20, 1625. His 42 plays are for the most part of a facile mediocrity, but he has to his credit the longest run of the century for his *Timocrate* (1656), the largest price for his *La Devineresse* (1679), and one of the most sensational failures in his *Baron des Fandrilles* (1686). He was given his brother's chair in the Academy after the latter's death (1685), and published a dictionary supplementary to the Academy's, and a complete translation of Ovid's *Metamorphoses*, as well as a *Dictionnaire universel, géographique et historique* (1708). He was blind from 1704, but his literary activity continued uninterrupted until his death at Les Andelys, Dec. 8, 1709). *Ariane* (1672)

and *Le comte d'Essex* (1678), an historical drama, are among his plays the best worthy of memory. His dramatic *Works* are edited by Thierry (Paris, 1881). Consult Reynier, *Thomas Corneille, sa vie et son théâtre* (Paris, 1893), and Alfred de Vigny, *Fragments inédits de critique sur Pierre et Thomas Corneille* (published in 1905).

CORNEL (OF. *cornille*, from Lat. *cornolium*, cornel tree, Lat. *cornus*, a cornel cherry tree, from *cornu*, horn, so called on account of the hardness of the wood). A term applied in America to various plants of the genus *Cornus*. In Europe the name seems to be restricted to *Cornus mas*, known as "cornel" or "cornelian cherry." It is a common shrub and was formerly much cultivated as a fruit tree. It has oval leaves, small heads of yellow flowers appearing before the leaves in spring. The fruit is oblong in shape, a little larger than the sloe, shining red, rarely yellow or white, and when perfectly ripe has an agreeable vinous acid taste. It is either eaten as it comes from the tree or is made into a preserve. When gathered green, it is pickled like olives. In America none of the plants to which the name is applied bears an edible fruit of value. *Cornus canadensis*, dwarf cornel, or bunchberry, is not properly edible, and, so far as known, has been little used by man. See Dogwood.

CORNELIA. A celebrated Roman matron, younger daughter of Scipio Africanus the Elder, and mother of the great tribunes Tiberius and Gaius Gracchus and of Cornelia, the wife of Scipio Africanus the Younger. On the death of her husband, refusing numerous offers of marriage, including even one from King Ptolemy, she devoted herself to the education of her 12 children, a task for which her lofty spirit, careful education, and wide attainments rendered her admirably fitted, and which had extraordinary results. On her death a statue was erected to her memory bearing the inscription "Cornelia, Mother of the Gracchi." The base, with the inscription, is now in the Capitoline Museum at Rome. To a Campanian lady who asked to see her jewels, she is said to have presented her sons as the only jewels of which she could boast. After the murder of Gaius, the second of her sons, she retired to Misenum, where she devoted herself to Greek and Latin literature and to the society of men of letters.

CORNELIA GENS. A distinguished clan of Rome, partly patrician, partly plebeian. The names (*cognomina*) of its patrician families, from which came more prominent men than from any other Roman gens, are Arvina, Blasio, Cethegus, Cinna, Cossus, Dolabella, Lentulus, Maluginensis, Mammula, Merenda, Merula, Rufinus, Scapula, Scipio, Sisenna, and Sulla.

CORNELIAN CHERRY. See CORNEL.

CORNELISZ, kôr-nâ'lis, or **CORNELISSEN**, called CORNELIS VAN HAARLEM (1562-1638). A Dutch historical and portrait painter. He studied in Haarlem under Pieter Pietersz and in Antwerp under Conquet, but finally returned to Haarlem, where he occupied a very influential position until his death. He is best known for his "Banquet of the Archer's Guild" (1583) in the Haarlem Museum. This painting is remarkable for the natural poses and clever grouping of the figures and undoubtedly influenced Frans Hals. His portraits are excellent, but his historical and mythological compositions, painted in the Italian style, are full of exag-

gerations and mannerisms. In his two large paintings of the "Massacre of the Innocents," in Amsterdam and The Hague, he displays great skill in foreshortening. Consult Wedekind, *Cornelis Cornelisz van Haarlem* (Leipzig, 1911).

CORNELIUS. Bishop of Rome, 251-253. He ranks as the twenty-first pope. His lenient course respecting the lapsed (q.v.), those who under persecution had renounced Christianity, led to the opposition of Novatian and to the Novatian schism. When persecution was renewed in Rome by Gallus, he fled to Civitavecchia, and there met a martyr's death, in June, 253. His day is celebrated with that of St. Cyprian on September 14. His correspondence with St. Cyprian on the question of the lapsed is of great historic interest and value, especially on the question of the position of the Roman see. Consult Hartel's edition of the *Letters of Cyprian*, vol. ii (Vienna, 1871).

CORNELIUS, kôr-nâ'le-soos, KARL SEBASTIAN (1819-96). A German physicist, born at Ronshausen in Lower Hesse. He studied the exact sciences at Göttingen and at Marburg and from 1851 to the time of his death taught physics and physiography at Halle. His published works include: *Die Lehre von der Elektrizität und dem Magnetismus* (1855); *Theorie des Sehens und räumlichen Vorstellens vom physikalischen, physiologischen, und psychologischen Standpunkte aus betrachtet* (1861, followed by another work on the same subject in 1864); *Meteorologie* (1863); *Ueber die Bedeutung des Kausalprinzips in der Naturwissenschaft* (1867); *Ueber die Entstehung der Welt* (1870); *Ueber die Wechselwirkung zwischen Leib und Seele* (2d ed., 1875, followed by another work on the same subject in 1880); *Grundriss der physikalischen Geographie* (6th ed., 1886); *Abhandlungen zur Naturwissenschaft und Psychologie* (1887).

CORNELIUS, PETER (1824-74). A German composer, nephew of the painter Peter von Cornelius, born at Mayence, Dec. 24, 1824. He studied for the stage, but, not meeting with success as an actor, he turned his attention to music. He became intimate with Liszt, who in 1858 produced his opera, *Der Barbier von Bagdad*, in Weimar, where, however, it failed. He then moved to Vienna, where he composed his second opera, *Der Cid*, produced in Weimar in 1865. In the same year he followed Wagner to Munich, where he was appointed to a professorship at the Königliche Musikschule. Although he devoted much of his time to fighting for Wagner's art, he produced his great choral works, op. 9-14, between 1868 and 1872. In 1869 he began his opera *Gundod*, which, however, progressed so slowly that when the composer died, Oct. 26, 1874, the work remained a fragment. His pupil C. Hoffbauer completed it from the sketches. E. Lassen reorchestrated it and produced it in Weimar in 1891. Cornelius' masterpiece is *Der Barbier von Bagdad*, which was completely rescored by Mottl and Levi and produced again in Munich in 1885. Its success was instantaneous and overwhelming, so that to-day it is in the regular repertoire of all German opera houses. In 1890 Seidl brought it out with great success at the Metropolitan Opera House, New York. Besides these works Cornelius wrote 69 songs for one voice and 7 duets, many of which are worthy to be ranked with the best songs of the great masters of song. Quantitatively Cornelius' musical output is rather

meagre, consisting of only 20 opus numbers, not including the operas. According to his own confession his close association with Wagner is to some extent responsible for this. His admiration of the Bayreuth master was so great that it almost suppressed his own creative impulses. Furthermore, Cornelius was a lyric poet of no mean order, a writer on music of unusual acumen, and a masterly translator. The chief characteristics of his music are nobility, refinement, and power of characterization. The more one studies it, the greater appears its charm. Cornelius' complete works were published in 1905 by Breitkopf and Härtel (5 vols.), his literary works and letters in 4 vols. Consult E. Istel, *Peter Cornelius* (Leipzig, 1904), and E. Sulzer-Gebing, *Peter Cornelius als Mensch und Dichter* (Munich, 1908).

CORNELIUS, PETER VON (1783-1867). A German historical painter, the founder of the Munich school. He was born, Sept. 23, 1783, in Düsseldorf, where his father was inspector of the gallery. From him the lad learned the rudiments of art, and from about 1795 he received instruction in the Düsseldorf Academy under Langer. His earliest works are unimportant, but after his removal to Frankfurt-on-the-Main, in 1809, he acquired some celebrity. His first work of importance was his 12 drawings of Goethe's *Faust*, now in the Städels Institute of Frankfurt. In 1811 he went to Rome, devoting himself to the study of the art of the Cinquecento, especially to that of Raphael and Michelangelo. He was associated with the so-called Nazarene painters, among whom he found a lifelong friend in Overbeck, but he was too independent to follow their footsteps. During this period he executed his famous drawings for the Nibelungenlied. Together with Overbeck, Veit, and Schadow, he received a commission to decorate a room in the house of the Prussian Consul at Rome, with scenes from the "History of Joseph." In executing this task he revived fresco painting, which had been almost forgotten since the days of Raphael Mengs. His work and that of his associates excited the greatest admiration, and they were engaged to decorate a room in the Villa Massimi, opposite the Lateran, with frescoes from the works of Dante, Ariosto, and Tasso. He had scarcely begun his work when there came a double call to return to Germany. The Prussian government invited him to become head of the Düsseldorf Academy, and Crown Prince Louis of Bavaria chose him to decorate the new Glyptothek in Munich.

Cornelius arranged to pass his winters in Düsseldorf, where a great crowd of students soon gathered about him, and his summers in executing the frescoes in Munich. He returned to Germany in 1819, and in 1820 he began his work upon the frescoes, which were carried out by his pupils, painting after his designs. In two great halls of the Glyptothek he represented the myths of the Greek gods and heroes in works which are masterpieces of drawing and composition. In 1825 he became director of the Academy of Munich and was raised to the nobility by King Louis I of Bavaria. He finished the frescoes of the Glyptothek, representing in the third hall scenes from the *Iliad*. All of this work, however, was executed by his pupils and may best be studied in the original cartoons by Cornelius, which are now preserved in the National Gallery of Berlin. In 1830 he be-

gan the decoration of the Ludwigskirche in Munich, with frescoes representing the "General Confession of Faith of the Christian Church." Contrary to his usual custom, he himself painted upon the large altar wall (62 × 38 feet) a fresco of the "Last Judgment." During the same time he made the designs for the "History of Christian Art" for the 25 loggie of the old Pinakothek, which were painted by Zimmermann.

After a disagreement with the King of Bavaria he was called to Berlin by Frederick William IV in 1841 and given a commission to decorate the proposed Campo Santo, a burial place for the royal family of Prussia. The four cartoons executed for this purpose, now in the National Gallery in Berlin, surpass all his previous work. This is especially true of the one containing the "Four Apocalyptic Riders," which is a masterpiece of conception, dramatic life, and boldness of drawing. On the other hand, the "Beatitudes" show appreciation for the beautiful and compact in outline. Until nearly the time of his death Cornelius was occupied with cartoons. He resided mostly in Rome, but returned to Berlin in 1861 remaining there until his death, which occurred March 6, 1867. During this last period he executed his design for a silver shield, which was a christening present of the King of Prussia to the Prince of Wales, his godson, representing the "Expansion of the Church." He also painted his dramatic picture "Hagen Casting the Nibelungen Treasure into the Rhine," now in the National Gallery, Berlin.

More than any other man, Cornelius dominated German art of the early nineteenth century. For decades his "cartoon style," with its emphasis of design and neglect of color, prevailed in mural decorations, especially at Munich, where his influence has only recently disappeared. His contemporaries held him in high repute, echoing the opinion of Crown Prince Louis: "There has been no painter like Cornelius since the Cinquecento." Modern critics, on the other hand, are not equally favorable, some of them, as Muther, going to the opposite extreme of considering his activity harmful. It is true that he imitated Michelangelo, and that imitation can never produce the healthiest and greatest art; that Cornelius' work is of an intellectual character, requiring study for appreciation; that his colors are poor, and that he is sometimes deficient even in drawing. But, on the other hand, his works were certainly great in composition and in conception. His tendency, like Michelangelo's, was heroic, indeed Titanic, but he was not insensible to grace and was capable of expressing the tenderest emotion. He was more of a designer than a painter, and his work must be judged by his cartoons. And certainly no painter exercised greater influence upon German art and imagination than did Cornelius in his great cycles of frescoes in Munich and in his cartoons in Berlin. Among his pupils were Wilhelm Kaulbach (q.v.), Carl Hermann, Eberle, and many others.

Consult the monographs of Von Wolzogen (Berlin, 1867), Riegel (Hanover, 1870), Förster (Berlin, 1874), Koch (Stuttgart, 1905), and Eckert, in *Künstlermonographien* (Bielefeld, 1906); Grimm, *Neun Essays* (Berlin, 1885); Valentin, in *Dohme, Kunst und Künstler des neunzehnten Jahrhunderts* (Leipzig, 1883);

Muther, *History of Modern Painting* (Eng. trans., London, 1895).

CORNELIUS A LAPIDE (1568-1637). A Roman Catholic commentator, whose name was Van den Steen. He was born at Bochoit, near Liège. He became a Jesuit and lectured on the Scriptures in Louvain and in Rome, where he died. His fame rests upon his commentary on all the Bible except Job and the Psalms, the first complete edition of which was published in 10 vols., folio (Antwerp, 1681). The best edition appeared in Lyons (1838), in 11 vols., and an English translation of parts of it has been published (3 vols., London, 1876-87).

CORNELL, ALONZO BARTON (1832-1904). An American politician, son of Ezra Cornell (q.v.). He was born at Ithaca, N. Y., became a telegraph operator, and from 1855 to 1859 was manager of the Central Telegraph Office in New York City. Afterward he was first vice president of the Western Union Telegraph Company. In 1868 he was the Republican candidate for Lieutenant Governor of New York, and from 1869 to 1873 was surveyor of customs in New York. By calling to order a Republican State convention he was held to have violated President Hayes's order that officeholders refrain from politics, and as a consequence he lost the surveyorship. He was chairman of the Republican-State Committee from 1870 to 1878 and was three times Speaker of the New York Assembly. From 1880 to 1883 he was Governor of New York, after which he became connected with large financial interests. He wrote *The Life of Ezra Cornell* (1884).

CORNELL, EZRA (1807-74). An American capitalist and philanthropist, the founder of Cornell University. He was born in Westchester Co., N. Y., of Quaker parentage; removed with his father, a potter by trade, to De Ruyter, N. Y., in 1819; received a scant education and for some time taught a district school, besides assisting his father in farming and the making of pottery. He also learned the carpenter's trade, spent a year as a mechanic at Homer, N. Y., and in 1826 removed to Ithaca, where for eight years he managed a flour mill. In 1839 he joined his brother in the lumbering and farming business, but his attention being turned accidentally in 1842 to the project of constructing a telegraph line from Baltimore to Washington, he invented a machine for laying the wires underground and was subsequently put in charge of the work. The insulation being poor, however, the plan had to be abandoned, and on Cornell's suggestion the wires were strung on poles, and the line was thus speedily completed. Subsequently Cornell devoted his attention almost wholly to the construction of telegraph lines and the organization of telegraph companies, and was instrumental in forming the Western Union Telegraph Company in 1855. In 1858, having accumulated a large fortune, he settled on a farm at Ithaca, N. Y. He was a member of the first Republican National Convention in 1856, was president of the New York State Agricultural Society in 1862, and was a member of the State Assembly in 1862-63, and of the State Senate in 1864-67. After the passage of the Morrill Land-Grant Act in 1862 he succeeded in getting a bill through the Legislature assigning the whole of New York's land scrip to one institution, and in addition contributed an endowment of \$500,000 towards building such an institution at

Ithaca, N. Y. He subsequently (in 1866) bought up the scrip then remaining unsold and located it with great care in the timberlands of Wisconsin, of which the later advance in value greatly increased the endowment of the university. In 1868 "The Cornell University," so founded, was formally opened. Cornell also built a public library at Ithaca. Consult *The Life of Ezra Cornell*, by his son, A. B. Cornell (New York, 1884).

CORNELL COLLEGE. An institution of higher learning founded at Mount Vernon, Iowa, by members of the Methodist Episcopal church in 1853. It was not organized as a college until 1857. It includes an academic department and a department of civil engineering and is coeducational. The degrees are B.A., B.S., and B.S. in C. E. The enrollment in the college in 1913 was 704, and the faculty numbered 41. Besides the college proper, the organization includes an Academy, a Conservatory of Music, a School of Art, and a School of Oratory. The principal buildings of the college are the Library and College, Science, Chapel, Bowman, and Conservatory halls. The endowment amounted to about \$900,000, and the annual income to about \$90,000. The library contains about 39,000 volumes. The president in 1914 was James Elliott Harlan, LL.D.

CORNELL UNIVERSITY. An institution of higher education, situated at Ithaca, N. Y. The university owes its existence to the combined wisdom and bounty of the United States, the State of New York, and Ezra Cornell (q.v.). Under the Morrill Act of 1862 the State of New York received scrip representing 989,920 acres of land as its share of the public lands granted by the Federal government to the several States for the purpose of establishing colleges of agriculture and mechanic arts. Ezra Cornell offered \$500,000 as an endowment fund for a university on condition that the State should set aside the proceeds of the sale of its public lands for the same purpose, and that the narrower purpose of the Act of Congress in establishing colleges of agriculture and the mechanic arts should be enlarged to the breadth of his own memorable ideal: "I would found an institution where any person can find instruction in any study." After much wrangling in the Legislature, this offer was accepted, with the stipulation, however, that the university should offer free tuition to as many students residing in the State as there were Assembly districts. Cornell University was incorporated in 1865 and was formally opened in 1868, with a registration of 412 students. The plan of the whole institution was modeled with a view to the practical tendencies of the times, though classical and humanistic studies were provided for as amply as science and technology. Its liberal programme was warmly welcomed by such men as James Russell Lowell, Louis Agassiz, Theodore D. Dwight, John Stanton Gould, Goldwin Smith, George William Curtis, and Bayard Taylor, who signified their interest in it by accepting nonresident professorships on its faculty. Andrew D. White gave up for a while the prospects of a political career to become its first president. This auspicious beginning, however, was not maintained. From 1868 to 1882 the university was engaged in a struggle for existence that seriously diminished its students, disheartened its trustees, and brought the whole structure to the verge

of bankruptcy. Mr. Cornell, seeing that the State's land scrip, on whose proceeds the university was solely dependent except for the original endowment of \$500,000, was selling at about 50 cents an acre, a sum far less than its ultimate worth, bought up all the unsold "scrip" and located and transferred to the university before his death over 500,000 acres of the finest timberlands in Wisconsin. But the anticipated advance in forest values did not take place, taxes and cost of administration amounted to over \$60,000 a year, and the university was soon obliged to trench heavily on its capital to meet current expenses. A way of escape that offered in 1880 was blocked by Henry W. Sage, chairman of the board of trustees. In that year a New York syndicate proposed to buy 275,000 acres of the Western lands for \$1,225,000—an amount that would have released the trustees from their troubles. But Mr. Sage, believing that the lands would go still higher, refused his consent, and the bargain fell through. Less than two years later his faith was vindicated; 140,000 acres were sold for \$2,320,000, other sales were made later at increasing prices, and the university up to 1905 realized a net profit of some \$5,765,000. Besides its income from these sources Cornell received large private gifts. Henry W. Sage gave altogether \$1,175,000; Andrew D. White, \$200,000; O. H. Payne, \$970,000 for the New York branch of the Medical College; W. H. Sage, \$270,000, Hiram Sibley, \$155,000; D. B. Fayerweather, \$340,000; J. D. Rockefeller, \$250,000, Dean Sage, \$235,000; John McGraw, \$140,000, and H. W. Sibley, \$160,000.

Out of the 2704 students enrolled in the first five years, 2347 entered on the minimum entrance requirements. In 1872 the university became coeducational, and in 1877, in spite of the constant decrease in attendance, the entrance requirements were somewhat raised. In 1882 the faculty, including instructors and assistants, numbered but 49. The additions made to the library were few. During this anxious period in the history of the university the members of the faculty, ill paid and overworked, loyally stood by it and pursued their work notwithstanding all difficulties. New courses were offered in the departments of civil and mechanical engineering, architecture, agriculture, the sciences, humanities, and military science. After 1882 the university developed and expanded in accordance with the original idea of the founder. The Law School and the Andrew D. White School of History and Political Science were organized in 1887. The Sage School of Philosophy, which has become known for its work in mental and moral philosophy and in experimental psychology, was organized in 1890. President Schurman appealed to the State in 1892 for further aid, on the ground that Cornell, although not a State institution in the strict sense of the term, was educating 512 students free of tuition, and that the State was especially interested in education, agriculture, and allied subjects, for which, like the Western States, it should supply the necessary funds. The Legislature generously responded to his appeal by establishing at Cornell University the State Veterinary College in 1894, the State College of Forestry, the first institution of its kind in the United States, in 1898, and the State College of Agriculture in 1904, for the maintenance of which large legislative appropriations are annually made. The situa-

tion of Cornell University in a small town prevented it from adding a medical school to its departments, although a medical preparatory course has existed since its inception. In 1898 this problem was solved by establishing a medical college in the city of New York, with a branch at Ithaca, where the first two years of the course may be taken. In the same year the entrance requirements, which had been much raised since 1892, were put on a footing equivalent to those of the leading universities in the United States.

Cornell University comprises the following departments and colleges (the attendance given is in all cases that of 1912-13): 1. The Graduate Department, having charge of all students pursuing graduate work at the university under the several faculties. This department offers courses leading to the degrees of A.M., Ph.D., etc. It numbered 395 students. Twenty-four fellowships, ranging from \$500 to \$600 a year, and 17 scholarships, of the annual value of \$300 a year, are available for students. 2. The College of Arts and Sciences offers elective courses leading, whether sciences, letters, or the classics are mainly chosen, to the degree of A.B. The attendance was 1112. 3. The College of Law offers courses leading to the LL.B. degree and numbered 297 students. 4. The Medical College, partially conducted at New York City, confers the degree of M.D. and numbered 150 students. 5. The College of Agriculture offers courses leading to the B.S.A. degree and numbered 1849 students. Connected with this college is an agricultural experiment station, established by the Federal government in 1887. 6. The New York State Veterinary College confers the degree of D.V.M.; its attendance was 120. 7. The College of Architecture confers the degree of B.Arch. and had an attendance of 144. 8. The College of Civil Engineering confers the degree of C.E. and numbered 503 students. 9. Sibley College of Mechanical Engineering and Mechanic Arts, consisting of the departments of mechanical, electrical, experimental engineering, the department of mechanic arts, etc., confers the degree of M.E.; its total registration was 956.

Undergraduates are required, except for special reasons, to take a course of military drill, extending over one year, under the supervision of a United States army officer.

The government of the university is vested in a board of 39 trustees, the university faculty, composed of the professors and assistant professors, having charge of educational matters concerning the university as a whole, and the faculties of the several schools and colleges, who have charge of their respective divisions.

The number of regular students in 1912-13 was 4803, of whom 466 were women. To these must be added an enrollment of 1392 in the summer session and 597 in the winter school in agriculture. The staff of instruction numbered 750. The principal buildings of Cornell University include the \$300,000 Library, the gift of Henry W. Sage; Sage College and Prudence Riskey Hall, dormitories for women; Boardman Hall, Stimson Hall, Sibley College, Franklin Hall, Lincoln Hall, Rockefeller Hall, Morrill Hall, McGraw Hall, White Hall, Goldwin Smith Hall, Rand Hall, Auditorium, Home Economics building, and the several buildings of the veterinary and agricultural colleges. The campus, situated on a hill looking down upon Cayuga Lake and surrounded by gorges, falls, and cascades, is considered one

of the most beautiful in the world. Barnes Hall and Sage Chapel represent the religious life of the university. The libraries, including the famous Andrew D. White collection on the Protestant Reformation and the French Revolution and the Fiske Dante, Petrarch, and Icelandic collections, contain 427,000 volumes, besides 64,000 pamphlets. The income of the university is about \$2,487,510 a year. The presidents since its conception have been: Andrew D. White, LL.D. (1865-85); Charles Kendall Adams, LL.D. (1885-92); Jacob Gould Schurman, LL.D. (1892-).

COR'NEE. A commercial term originating in the United States, and denoting the operation, —or, more properly, the resultant effect—of acquiring contracts for the delivery of so much of a commodity, or of the stock or certificates of indebtedness of a corporation, as to raise abnormally the values thereof, to the advantage of the buyers. A corner is "effective" when those who have contracted to sell and deliver the stock or commodity are forced, for lack of other supply, to buy it, or the certificates or warehouse receipts representing it, from the buying or cornering pool at the pool's prices. Conversely, a corner is "smashed" when the buyers, finding their means inadequate to their operations, are forced to throw their holdings on the open market, or when those who have contracted to deliver the stock or commodity are able to obtain it independently of the pool. For the latter reason, because the total supply is not strictly determinable nor all obtainable, attempted corners in wheat and other actual commodities are seldom successful. On the other hand, corners in stocks and certificates having definite total issues may be carried just to the point where they bankrupt the seller, i. e., to a point where, if the prices are put any higher, the sellers repudiate their contracts and the corner is smashed for lack of a market. The possibility of any considerable corner arises from buying and selling on margin. In this usual and speculative form of stock dealing the broker or commission house lends the buyer or seller the money needed for the deal, demanding, however, for his own protection, a deposit of 5, 10, or 20 per cent of the face value of the contracts made. The dealer is thus enabled to buy or sell stock to a value of from 5 to 20 times the amount of his actual capital, and a combination of large dealers can without difficulty buy or sell the whole stock issue of the largest trusts or railroads. If, now, such a combination sells, i. e., agrees to deliver, practically the entire issue of a road, they may find when they attempt to buy the stock to fill their contracts that it is already held by the very persons to whom they contracted to sell it. That is, a rival combination has been secretly working against them, and the sellers of the stock are forced to buy the stock at exorbitant prices and then sell it back to those for whom they bought it. This is the process technically known as "squeezing the shorts." Until recent years nearly all corners of importance were manipulated for speculative reasons, i. e., for the immediate gain of the operators and without any view to investment. Of such a nature was the famous gold corner, organized in New York by Jay Gould and his associates. This corner, culminating on "Black Friday," Sept. 24, 1869, was smashed by the release of government gold by the Secretary of the Treasury—thus rendering the "shorts," or sellers of gold, independent

of the cornering syndicate that held the gold which the "shorts" had agreed to sell. Latterly, however, many corners or corners in effect have resulted, incidentally and often to the regret of all concerned, from the effort of rival combinations to buy the control of some large trust or railroad for permanent investment and administrative purposes. Of this kind was the corner in the Northern Pacific Railroad in May, 1901, when the price of the stock rose abruptly to 1000 bid. For an account of the gold corner of 1869, consult Boutwell, *Reminiscences of Sixty Years in Public Affairs* (New York, 1902). For an interesting account of the actual manipulation of a corner, consult Frederic, *The Market Place* (London, 1899). See MARGIN DEALS; SHORT; SPECULATION; TRUSTS.

COR'NET (OF., Fr. *cornet*, from ML. *cornetum*, *corneta*, bugle, dim. of *cornu*, horn). A stop or series of pipes in an organ, intended to imitate the tone of an obsolete wind instrument which has been superseded by the oboe. The **CORNET-A-PISTON** (Fr., cornet with pistons), a modern brass or silver wind instrument of the trumpet kind, has two or three valves and in brass bands takes the soprano and contralto parts. Its range is from *c'* to *c''*. It was first introduced in France as an orchestral instrument. The cornet-a-piston produces very penetrating tones, though less powerful than those of the trumpet. The rapidity of execution in runs, trills, staccatos, etc., which can be attained on this instrument, combined with the pealing quality of its tones, has made it the favorite solo instrument in open-air band concerts; but this very resonance will most likely keep it out of the symphonic orchestra.

CORNET (Fr. *cornette*, standard, so called as having two points or horns, dim. of *corne*, from Lat. *cornu*, horn). Formerly the lowest commissioned rank in the British cavalry, so called because the cornet carried the standard. Its equivalent rank in the infantry was the ensign (q.v.). In 1871 the titles of cornet and ensign were changed to second lieutenant.

CORNETO, kór-ná'tò, or CORNETO TARQUINIA (from It. *cornu*, horn). A town of central Italy, about 12 miles north of Civitavecchia, occupying a commanding eminence on the left bank of the Marta, and 2 or 3 miles from the Mediterranean, over which it has an extensive view. Corneto arose near the ruins of the Etruscan city of Tarquinii, and was built in part from its remains. It was erected into a city by Pope Eugenius IV in 1432, but the picturesque old battlemented walls and towers which surround it are said to belong to an earlier period. During the wars of the Guelphs and the Ghibellines this city maintained a firm allegiance to the popes. Pop. (commune), 1910, 6617. The scanty remains of Tarquinii lie about 1½ miles from Corneto. Tarquinii was regarded as one of the most ancient and important of the Etruscan cities and took part in the wars with Rome in the fourth century B.C., but later, with the rest of Etruria, came under the Roman dominion. It seems to have been destroyed by the Saracens. The Necropolis of Tarquinii, which is far the most important relic of the ancient city, is on the same hill as the modern city and extends into the neighboring plain. It is of great extent and has been said to cover 16 square miles. Many tombs have been opened, but most of them had been plundered in early times. The most important tombs are those decorated with paintings on the walls; noteworthy are the Grotta

CORNFLOWER, ETC.



1. COCKLEBUR (*Xanthium strumarium*).
2. CORNFLOWER (*Centaurea cyanus*).
3. CALISAYA (*Cinchona calisaya*), var. *Ledgeriana*.

4. COLCHICUM (*Colchicum autumnale*).
5. COCA (*Erythroxylon coca*).
6. NIGHT-BLOOMING CATCHFLY (*Silene noctiflora*).

delle Iscrizioni (probably one of the earliest), Grotta del Barone, Grotta Querciola, Grotta del Convito Funebre, Grotta del Tifone, and Grotta dell' Orco. Consult: Dennis, *Cities and Cemeteries of Etruria* (London, 1907); Dasti, *Notizie di Tarquinia e Corneto* (Rome, 1878); and the periodical *Notizie degli Scavi* (1906, 1907).

CORN FLAG. See **IRIS**.

CORN FLOWER, or BLUEBOTTLE (*Centaurea cyanus*). A plant of the family Compositae, indigenous to Europe, where it is a common weed in grainfields and whence it has spread to other countries. Its long, slender, branched stems, which reach a height of from 1 to 2½ feet, bear terminal flower heads about 1½ inches in diameter during summer and autumn. These flower heads have a wreathlike appearance, due to the neutral ray florets, and from early times have been favorites for making garlands. Being hardy and of easiest culture, the cornflower has become one of the most popular annuals in American flower gardens and has developed many varieties, which range through various shades from deepest blue to white. In the United States it has at least 15 names, the commonest of which is perhaps "bachelor's-button," a name also applied to two other plants, *Ranunculus acris* and *Gomphrena globosa*.

CORN HILL. An important London street, named from a corn market formerly held there. The Tun, a prison, and the Standard, a water conduit, stood upon it in mediæval times.

CORNIANI, kôr'nê-â'nê, GIAMBATTISTA, CONTE DI (1742-1813). An Italian literary historian, born at Orzi-Nuovi (Brescia). In his youth he studied law and wrote for the theatre; but afterward he became connected with the College of Brescia and published some works on agriculture. In 1797 he was made one of the Tribunal of Cassation for the Cisalpine Republic. The work for which Corniani is best known is a literary history of Italy, *I secoli della letteratura italiana* (1804-13; new ed. by Ticozzi, 1832, and by Ticozzi-Predari, 1854-56).

CORN NICE (OF, *it. cornice*, ML. *cornix*, border, from GK. *κορνίσις*, *korônîs*, garland, from *κορνός*, *korônós*, curved, connected with Lat. *corona*, crown, Ir. *cor*, circle). In architecture, the projecting cope or coping at the top of a wall; the crowning member of an entablature (q.v.). Its origin is to be found in the decoration of the eaves or projecting edge of the roof, its earliest forms recall primitive eaves construction; but, like so many forms derived from structural devices, it early became a decorative feature, quite independent of the eaves and even of the roof. The Egyptian cornice, invariably a high projecting cavetto and fillet above a round bead or torus, was probably derived from the overhanging eaves of papyrus stalks and earth in primitive huts. The Greeks developed two chief types of cornice in the Doric and Ionic orders, both recalling early eaves construction in wood. To these the Romans added a third, the Corinthian, of more ornate design than either, and these types have persisted through all the ages since, though with endless variations of detail. In all cornices of classic type the essential feature is the *corona* (q.v.), the broadly projecting square-edged member which casts the wide shadow which is one of the most important decorative effects of a cornice. A group of moldings, called the *bed-mold*, supports this shelf, and it is usually crowned by a *cymatium* or crown molding, which generally forms the front

of the gutter or eaves trough. This, however, is wanting on the Greek-Doric cornice, except upon the sloping or raking cornices of triangular pediments. The *bed-mold* may be plain or adorned with dentils; and the cornice may be further enriched with modillions or brackets, as in the Corinthian and Composite orders, or with *mutules*, under the corona, as in the Doric.

In Syrian-Christian and in Byzantine architecture the classic types were greatly modified, and in early Christian or basilican buildings the cornice gradually lost its importance. The Romanesque builders in Italy devised a new type, the arcaded, borne on small arches resting on corbels; in the West they more often employed the corbel table—a plain stone shelf or cope resting on corbels without arches or moldings. Gothic art, emphasizing vertical lines, subordinated the cornice as an architectural feature. Gothic cornices are little more than groups of vigorous moldings under a bevel-topped coping; but in some cases a deep hollow under the coping is filled with richly carved vines, leafage, or rows of crockets. The Renaissance revived the classic types, which are in general use to-day. As the top member of an entablature, the cornice is used not merely to mark the edge of the roof, but also as a band between successive stories, and as the topmost feature and finish in furniture and many forms of minor architecture. See **ENTABLATURE**, **ORDERS OF ARCHITECTURE**.

CORNICHEE, kôr'nêsh', ROUTE DE LA (Fr., cornice road). A renowned carriage road following the coast line of the Riviera between Nice and Genoa. It is noted for its striking views, particularly between Nice and Mentone, and is much traveled in preference to the railway.

CORNIDES, kôr'nê-dêz, DANIEL VON (1732-87). An Hungarian historian, born at Szent-Miklós. He studied philosophy and theology at Erlangen, Germany. As the companion of Count Joseph Teleki, he visited Italy, Germany, and France, and while in Germany contributed greatly to the enlargement of the Hungarian department in the University of Göttingen and other institutions. In 1784 he was appointed librarian and professor of heraldry and diplomacy at the University of Pest. His principal works include: *Regum Hungarica, qui Sæculo XI Regnavere, Genealogia* (Pressburg, 1778); *Bibliotheca Hungarica* (Pest, 1792); *Commentatio de Religione Veterum Hungarorum* (Vienna, 1791). *Vindictæ Anonymi Bela Regis Notarii* (Buda, 1802).

CORNIFEROUS SERIES (from Lat. *cornu*, horn + *ferre*, to bear). In American geology, the second of the four great divisions of the Devonian system, so named on account of the hard cherty nodules found in many of its limestones. It includes the Schoharie and Corniferous stages. The rocks of the Corniferous series—mostly sandstones and limestones—are found along the Appalachians, in Ohio, and in Canada, where they inclose valuable deposits of petroleum. See **DEVONIAN SYSTEM**.

CORNIFICIUS, kôr'nê-fish'-tûs. A Roman, unknown, save for Quintilian's references to him as author of a work on rhetorical figures, and, perhaps, of a general work on rhetoric. We still have four books entitled *Rhetorica*, and dedicated *ad Herennium*. Since many passages quoted by Quintilian from Cornificius appear in the *Rhetorica ad Herennium*, it was long held that Cornificius was author of the treatise. Re-

cent opinion, however, is against this view. Consult the editions by Kayser (Leipzig, 1854), Friedrich (part i, vol. i, of the Teubner *Cicero*, Leipzig, 1884), and Marx, who refuses to recognize the authorship of Cornificius and has published the text under the title *Incerti Auctoris de Ratone Dicendi ad C. Herennium Libri IV* (Leipzig, 1893); Kröhner, *Die Anfänge der Rhetorik bei den Römern* (Memel, 1871). Schauz, *Geschichte der römischen Litteratur*, § 197 a (3d ed., Munich, 1909), has also ceased to regard Cornificius as the author of the treatise *ad Herennium*. For further discussion of the question of authorship and a good account of the contents of the treatise, see the introduction to Wilkins's edition of the *De Oratore* of Cicero, vol. 1, pp. 51-64 (2d ed., Oxford, 1888).

CORNIFICIUS, QUINTUS (?-c.40 B.C.). A Roman general, a contemporary of Cicero. During the Civil War he supported Caesar, by whom he was appointed Governor of Syria and afterward of Africa. After Caesar's death he maintained the latter province for the Senate, but on the establishment of the Second Triumvirate was defeated and slain in battle by T. Sextius. Cornificius appears to have been distinguished also for his literary abilities.

CORNING. A city and the county seat of Adams Co., Iowa, 77 miles east-southeast of Council Bluffs, on the Burlington Route (Map-Iowa, C 4). It has a public library and a fine Masonic Temple. Agriculture and stock raising are the chief industries, and brick and tile are manufactured. Corning was incorporated under a State Law of 1871. It was formerly the seat of an Icarian settlement. The government is administered by a mayor and a unicameral council. The city owns its water works. Pop., 1910, 1702.

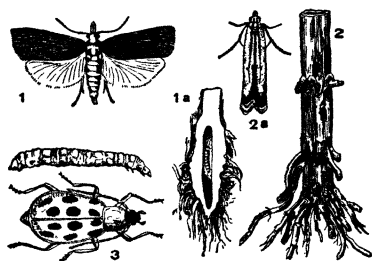
CORNING. A city and the county seat of Steuben Co., N. Y., 18 miles by rail west-northwest of Elmira; on the Chemung River, and on the New York Central, the Erie, and the Lackawanna railroads (Map-New York, C 6). Among the more prominent buildings are the city hall, free academy, public library, Corning Hospital, courthouse, city club, and St. Mary's Orphan Asylum. Corning has extensive manufactures of cut and flint glass, railway supplies, pneumatic drills, air compressors, terra-cotta goods, building and paving brick, lumber, sash and blinds, etc. Corning was incorporated as a city in 1890. Under the revised charter of 1905 the mayor holds office for two years and the council is elected. The board of public works, police, fire, and civil-service commissioners, and the board of health are appointed by the mayor and council. The water works are owned by the city. Pop., 1910, 13,730.

CORNING, ERASTUS (1794-1872). An American capitalist, born in Connecticut. In 1814 he settled in Albany, N. Y., where, as owner of the large ironworks there and later as a banker, he accumulated a large fortune. He was largely interested in the formation of the New York Central Railroad, of which he was president for 12 years. He was also active in promoting popular education and, taking part in public affairs, served as a State Senator in 1842-45 and as a Democratic Representative in Congress in 1857-59 and again in 1861-63.

CORNING, J (AMES) LEONARD (1855-). An American neurologist, born at Stamford, Conn., and educated at the universities of Heidelberg and Würzburg. He is known as the dis-

coverer of spinal anæsthesia and as the first to inject liquid paraffin into the tissues, there to solidify; he also demonstrated that the action of stimulants, sedatives, and certain other medicinal substances may be increased if the subject remains in compressed air. As consulting neurologist he served various New York hospitals and, besides his contributions to the medical press, wrote: *Carotid Compression* (1882); *Brain Rest* (1883); *Brain Exhaustion* (1884); *Local Anæsthesia* (1886); *Hysteria and Epilepsy* (1888); *A Treatise on Headache and Neuralgia* (1888; 3d ed., 1894); *Pain in its Neuro-Pathological and Neuro-Therapeutic Relations* (1894), and also a romance, *The Princess Ahmedée* (1900).

CORN INSECTS. Insects affecting Indian corn are numerous and varied.—*Plant Lice:* An aphid (*Rhopalosiphum maidis*) is widely distributed by means of its migratory winged



INSECTS INJURIOUS TO INDIAN CORN

1 Larger cornstalk borer (*Diatraea*) and, a boring larva within the base of the stalk 2 Smaller borer (*Pamphelus*) a, the moth at rest 3 A flea beetle (*Diabrotica*) and its root-destroying grub

swarms; it lays its eggs on the stems of the corn beneath the ground, and the young attack the roots; the ants assist this injury by carrying females heavy with young and colonizing them upon the roots. (See *Insect Life*, vols. 1, ii, Washington, 1888-90.)—*Beetles:* Certain weevils attack the roots and stems, especially bill bugs of the genus *Sphenophorus*, the grubs burrowing in the bulbs of the young plants and eating the roots of the tender leaves near the surface of the ground; their work is sometimes confounded with that of a cutworm (larva of *Hadena stipitata*). Fall plowing is useful against both. The larvae of several flea beetles (*Diabrotica*) are often styled corn rootworms. The adult beetles, closely related to the cucumber, melon, and squash beetles, feed on the pollen and silk of corn and the larvae on the roots, and both do great damage in the Mississippi valley. Rotation of crops is the most effective remedy. The corn silvanus (*Silvanus surinamensis*) is prominent as destructive to grain. From an economic standpoint this is the most important member of the family Cucujidae. It is a flat beetle with the edges of the prothorax saw-toothed. Besides Indian corn, wheat, and other grain, it infests dried fruits and other foodstuffs. Another member of the same family, a bright-scarlet beetle, of the genus *Cucujus*, also infests stored grain.—*Moths:* The larvae of moths, "cutworms" and "webworms," do much damage. The worst species, however, is the "corn worm," or "corn bud worm," the caterpillar of a noctuid moth (*Heliothis armigera*), which destroys the flower buds,

(See COTTON INSECTS.) The large "stalk borer," often highly injurious in Southern fields, is the larva of a phalanid moth (*Diatraea saccharalis*), which perforates the stems at their base, where, in the axils of the starting leaves, the parent moth lays its eggs in spring. This insect is better known as the "sugar-cane borer" of the American tropics. Tidy methods of farming are the best preventive. Other smaller borers are the caterpillars of the moths *Pempelia hy-nosella* and *Gortyna nitela*. The cinch bug (q.v.) is also an enemy of Indian corn. Consult: Riley, "Insects of Missouri," in *United States Department of Agriculture, Division of Entomology, Reports 1 and 3* (Washington, 1881); Lintner, "Insects of New York," in *Agricultural Experiment Station, Report 1* (Albany, 1882); Comstock and Slingerland, "Wireworms," in *Agricultural Experiment Station, Bulletin 33* (Ithaca, 1891); Myrick (ed.), "Corn Pests and Diseases," in *The Book of Corn* (New York, 1904); Chittenden, "Corn Root-Worms," *United States Department of Agriculture* (Washington, 1905); Webster, "The Corn Leaf-Aphis," *United States Entomological Bureau* (Washington, 1907); Forbes, "Experiments with Repellents against the Corn Root-Aphis, 1905 and 1906," *Illinois Experiment Station* (Urbana, 1908); Garman, "The Corn Root-Worms," *Kentucky Agricultural Experiment Station, Bulletin No. 130* (Lexington, 1907); id., "Corn Pests," *Bulletin No. 145* (1909); Vickery, "Papers on Cereal and Forage Insects," *United States Entomological Bureau* (Washington, 1910); Turner, "Bud Worms in Corn," *Alabama Experiment Station, Circular No. 8* (Opelika, 1911); Kelly, "The Maise Bill-Bug," *United States Entomological Bureau, Bulletin 95*, part II (Washington, 1911); Falloway, "Insects Injurious to Corn," *United States Entomological Bureau* (ib., 1912).

CORNISH LANGUAGE AND LITERATURE. The Cornish language belongs to the British subdivision of the Celtic family and stands, on the whole, nearer to the Old Breton than to the Old Welsh. (See CELTIC LANGUAGES.) It ceased to be a living language in the eighteenth century, although a small number of Cornish words are still used in the English dialect of Cornwall.

Only a small quantity of Cornish literature has been preserved. For the Old Cornish period, of which the language is practically the same as Old Breton, nothing exists but a few proper names in old records. For Middle Cornish we are somewhat better off. A vocabulary of the twelfth or thirteenth century has been preserved, which appears to be a copy of a more ancient original, and also a few texts dating from the fourteenth century to the seventeenth. The Middle Cornish literature, like the Middle Breton, consists almost entirely of religious poetry and drama. These monuments scarcely go beyond the fifteenth century.

For Old Cornish, consult: Stokes, "The Manusmissions in the Bodmin Gospels," *Revue celtique*, vol. I (Paris, 1870), and *Urkettscher Sprachschatz* (Göttingen, 1894); Henry, *Lexique étymologique du breton moderne* (Rennes, 1900); Pedersen, *Vergleichende Grammatik der keltischen Sprachen* (Göttingen, 1909-13). The Middle Cornish vocabulary is printed in Zeuss, *Grammatica Celtica*, ed. by Ebel (Berlin, 1868-71). For the other monuments, consult: Norris, *The Ancient Cornish Drama* (Oxford, 1859);

Stokes, "Pascon Agan Arluth," *Transactions of the Philological Society* (London, 1861-62); *Beunans Meriasek* (ib., 1872); Jenner, *The Cornish Language* (ib., 1873-74); Jago, *The Ancient Language of Cornwall* (Truro, 1882). For grammars, consult Jenner, *Handbook of the Cornish Language* (London, 1904), which treats of the language chiefly in its latest stages, with some account of its history and literature. DICTIONARIES: R. Williams, *Lexicon Cornu-Britannicum* (Llandovery, 1865); Loth, *Remarques et corrections au lexicon de Williams* (Paris, 1902); further corrections and additions in the *Revue celtique* (vol. xxiii, pp. 237-302; Paris, 1902); Stokes, *Cornish Glossary* (London, 1868-69); Jago, *English-Cornish Dictionary* (ib., 1887); Loth, "Études celtiques," in *Revue Celtique*, vols. xviii-xxvi (1897-1905); *Les mots latins dans les langues britanniques: gallois, armoricain, cornique* (Paris, 1892).

CORN LAWS. A name given in England to the long series of statutes dating as far back as the reign of Edward III and terminating only in the year 1846, which had for their object the regulation of the trade in grain. The tenor of these laws varied with the idea which was uppermost in the minds of the legislators. At one time designed to secure a proper supply of grain, the exportation of grain was prohibited, or allowed only when a surplus of the home supply revealed itself in the low price for grain. Later the underlying principle was frankly the encouragement and support of the agricultural interests, resulting in the prohibition of the importation of grain, or permitting it only when the price of grain was extremely high and importation seemed unavoidable to prevent famine. At times, moreover, in the long and varied history of this legislation, resort was had to bounties as means of encouraging and promoting home production. The shifting of legislation attracted little comment and less agitation until the beginning of the nineteenth century. At that time the manufacturing interests grew restive under the restrictions which were placed upon the trade in grain, and early in the century something in the nature of a compromise was made by the adoption of a sliding scale in the duties on importation. The object of this device was to reduce the import duties in proportion as the price of grain increased, so that at famine prices grain might be imported duty free. By the Act of 1828, at the price of 62s. a quarter for wheat, the import duty was £1 4s. 8d. For every shilling less in the price, a shilling was added to the duty, but when the price rose above this point the duty decreased by a larger ratio than the rise in price. At the price of 69s. the duty was 15s. 8d., and at 73s. the duty sank to its minimum of 1s. Such an arrangement not only promoted speculative operations, but also prevented foreign countries from furnishing grain habitually for the British market.

This legislation was obviously in the interest of the landowners, but as the tendency of Great Britain to be an importing rather than an exporting country had already become manifest, it seemed clear that the effort to increase home production by restrictions on importation was virtually an attempt to aggrandize the landed interest by a tax upon the food of the people. The manufacturing interests, which were now rapidly coming into power, devoted their energies to combating this principle, which increased

the cost of living, and, through wages, the cost of manufacturing. But the public at large, though vaguely conscious that the laws were at variance with the principles of political economy, did not, till the very last, earnestly unite in calling for repeal. There was a powerful party who represented with wonderful plausibility that these restrictive statutes were identified with the best interests of the country. Their arguments might thus be summed up: 1. Protection was necessary, in order to keep certain poor lands in cultivation. 2. It was desirable to cultivate as much land as possible in order to improve the country. 3. If improvement by that means were checked, England would be dependent on foreigners for a large portion of the food of the people. 4. Such dependence would be fraught with immense danger; in the event of war supplies might be stopped, or the ports might be blockaded, the result being famine, disease, and civil war. 5. The advantage gained by protection enabled the landed proprietors and their tenants to encourage manufactures and trade; so much so, that if the corn laws were abolished, half the country shopkeepers would be ruined; that would be followed by the stoppage of many of the mills and factories, and no one would venture to say what would be the final consequences. It cannot be unconstructive to put on record that these arguments exercised a commanding influence over the laboring classes, the small town shopkeepers, almost all the members of the learned professions, and a considerable section of both houses of Parliament. Yielding at length to the continued agitation, and recognizing that England's prosperity lay in the development of her manufactures rather than in the further encouragement of agriculture, Sir Robert Peel, in 1846, at the time of the Irish famine, effected the repeal of the Corn Laws. By this act the maximum duty on foreign wheat was immediately reduced to 10s. per quarter when the price was under 48s., with lower duties as prices rose above that figure; these duties to cease on Feb. 1, 1849, after which the duty should be 1s. per quarter. (See ANTI-CORN LAW LEAGUE; COBDEN, RICHARD.) The area devoted to wheat cultivation in England is less to-day than it was 50 years ago, although the population has greatly increased. Modern methods of communication, however, have opened up new areas of supply, and the development of manufactures and commerce has amply compensated for the loss in agricultural production.

The following tables show the trade prior to and following the repeal of the Corn Laws.

years imports are measured in hundredweights. The increase in grain imports is shown in the following table:

YEAR	Wheat and wheat flour in cwt.s.	Value of all breadstuffs
		£
1860	31,841,926	31,676,353
1870	39,906,115	42,502,252
1880	68,459,814	62,857,269
1890	82,381,591	53,484,584
1900	98,597,450	50,929,313
1910	119,056,653	65,362,000
1912	123,724,589	73,428,538

In the meantime the aggregate value of all British imports and exports has risen from £376,000,000 in 1860 to £698,000,000 in 1880, £896,000,000 in 1905, and £1,232,000,000 in 1912. The growing dependence of Great Britain upon foreign sources of supply for breadstuffs is reflected in the decline of the area sown in grain crops, which in 1874 was reported as 9,431,276 acres, 6,953,034 acres in 1904, and 7,154,742 in 1912. Russia and other European countries contribute to the British imports, as does also India, but the principal sources whence imports are drawn are shown in the following statement:

IMPORTS OF WHEAT IN 1912

	Cwts
India	25,379,000
Russia	9,005,000
Argentina	18,783,000
Australia	11,908,000
United States	19,974,000
Canada	21,551,000
Rumania	1,491,000

Bibliography. The text of the Corn Laws is to be found in *British Statutes* (rev. ed., 16 vols., London, 1882-1900), and the speeches on both sides of the question in Hansard, *Parliamentary Debates* (1815-46). A comprehensive and accurate presentation of the whole subject and its bearing on trade is given in McCulloch, *Dictionary of Commerce and Commercial Navigation* (London, 1870), Acland and Ransome, *Political History of England* (ib., 1894), summarizes the Corn Laws previous to 1815, and the progress of legislation from that time until 1846, when the Corn Laws were repealed. Other sources of information are: "The First and Second Reports from the Select Committee on the Epworth (Corn Law) Petitions," *Great Britain Parl. Papers, Sess. 1843*, vol. xi; Wilson, *Influences of the Corn Laws* (London, 1840); Thornton, *Historical Summary of the Corn Laws* (ib., 1841); Platt, *History of the*

IMPORTS OF FOREIGN WHEAT, CURRENT PRICES OF WHEAT, AND DECLARED VALUE OF ALL BRITISH EXPORTS FROM 1801 TO 1859

AVERAGE PERIOD OF TEN YEARS	Average amount of wheat imported	Average price of wheat during each period	Average total declared value of all British exports
	Bushels	s d	£
1801 to 1810	600,946	81 5	40,737,970
1811 " 1820	458,578	84 11	41,506,794
1821 " 1830	534,992	58 3	36,600,536
1831 " 1840	907,638	56 10	45,249,037
1841 " 1850	2,877,999	53 3	57,412,494
1851 " 1859	4,547,311	54 9	103,253,189

Coincidentally with an increased importation of food stuffs there was a notable expansion of foreign trade, as shown in the exports. In later

British Corn Laws (ib., 1845); Morley, *Life of Richard Cobden* (ib., 1881); McCarthy, *The Epoch of Reform, 1830-50* (ib., 1882); Nichol-

son, *History of the Corn Laws* (ib., 1904); and for a full bibliography, *New York Public Library Bulletin*, vol. vi, No. 5 (New York, 1902).

CORN MARIGOLD. See CHRYSANTHEMUM.

CORNO, kôr'nô, MONTE (Mount Horn). The highest peak (9585 feet) of the Apennines (q.v.).

CORN OIL, CORN PITH. See MAIZE.

CORNOYER, PAUL (1864—). An American painter. He was born in St. Louis and studied there at the School of Fine Arts and in Paris under Lefebvre, Benjamin Constant, and Louis Blanc. In 1899 he came to New York, where he devoted himself principally to city scenes of a tranquil character. A subtle sense of values and rare atmospheric qualities constitute the great charm of his pictures. His favorite subjects are snow and rain effects, and he is at his best in such paintings as "Morning, Madison Square" (W. M. Chase collection, New York); "A Rainy Day, Madison Square"; "Late Afternoon, Washington Square"; "After the Rain" (Brooklyn Museum); "Hazy Morning, Fifty-ninth Street" (1911); "Old New York" (1912), "Library Lane" (1912)—all interpretations of a highly poetic character. Cornoyer was elected in 1913 an associate member of the National Academy of Design.

CORNPLANTER (1732-1836). A celebrated half-breed chief of the Seneca Indians, the son of a trader named John O'Ball. During the French and Indian War he led a war party of the Senecas which had joined the French against the English, and took part in the defeat of Braddock in 1755. During the Revolutionary War he joined the English, took an active part in the border conflicts in New York, and seems to have been present at the massacre of Wyoming. Afterward, however, he became a steadfast friend of the whites and, with Red Jacket, directed the affairs of his tribe for many years. He spent much time and energy in exhorting his nation to avoid intemperance. His Indian name was Garyan-Wah-Gah. Consult Snowden, *Historical Sketch of Cornplanter* (1867).

CORN SALAD, or LAMB'S LETTUCE (*Valerianella*). A genus of plants belonging to the family Valerianaceae. The species are annual plants of humble growth, with repeatedly forked stems and very small flowers, native in Europe. Some of them are frequently used as spring salads, and sometimes as a substitute for spinach, particularly the common corn salad (*Valerianella olitoria*). For early spring plants the seed is sown in September and cultivated, mulched, and wintered like spinach. Corn salad lacks pungency as a salad plant, but comes early in the spring when other salad plants are scarce. For illustration, see SALAD PLANTS.

CORNSHELLER. See MAIZE.

CORN SMUT. See SMUT.

CORN SNAKE (so called from its color, which resembles that of red Indian corn).



CORN SNAKE (*Coluber guttatus*).
(Plates of the top and side of the head)

Either of two harmless snakes in the southern United States: 1. *Coluber guttatus*, found in

Virginia and southward, 2½ feet long, reddish brown with black-bordered brick-red blotches. It climbs easily and feeds upon young birds and small rodents. 2. The milk snake (q.v.).

CORNSTALK (c.1720-77). A celebrated Shawnee Indian chief. He commanded the Indians in the stubborn battle of Point Pleasant (q.v.) on Oct. 10, 1774, during Lord Dunmore's War, and won the praise even of the whites by his great bravery and address. After the battle he made a treaty of peace with the Virginians, in spite of the opposition of a part of his tribe, and kept it loyally until 1777, when, the Shawnees being incited to renew hostilities, he appeared at Point Pleasant in person and notified the settlers that he might find himself forced "to run with the stream." The settlers decided to detain him and his son as hostages, and soon afterward, while still in confinement, the two were treacherously murdered by some whites infuriated by continued Shawnee outrages.

CORNSTALK DISEASE. A fatal disease that affects cattle, and occasionally horses and sheep, when turned into the fields in the fall after the corn has been gathered for the utilization of the stalks. The cause of the disease is still undetermined. By some investigators it has been considered as due to corn smut or to the organisms of the Burrill disease of corn. Others have believed that a poisonous principle is sometimes present in cornstalks which causes the death of animals. The name *taeemia maidis* for the disease was based on this theory. In some localities the disease has been supposed to be due to the combined action of indigestion and some poisonous substance absorbed by the corn, e.g., saltpetre. In a case of cattle poisoning in Kansas from eating dried cornstalks, an investigation revealed the presence of large quantities of potassium nitrate. This substance had formed in small white crystals which resembled mold, but was readily recognized by tasting. By cutting a cornstalk in two and tapping it on a table a considerable quantity of powdered nitrate of potash was jarred out. A chemical analysis showed that this substance constituted 18 per cent of the dry weight of the cornstalks. Feeding experiments with potassium nitrate showed that 500 grams would kill an adult animal weighing 1200 pounds. It has been suggested that hydrocyanic acid may form in the stalks and be the cause, but sufficient evidence of this is lacking.

The symptoms are those of violent digestive disturbances followed by delirium and complete unconsciousness. A pronounced weakness of the hind parts is usually observed, which finally leads to paralysis.

Corn smut has been extracted with alcohol and injected into guinea pigs with negative results, and no poisonous alkaloid has been isolated by chemical means. Corn affected with the Burrill corn disease has been fed to cattle without producing any poisonous effects. Some investigators consider cornstalk disease to be a form of hemorrhagic septicæmia. There is no medicinal treatment that seems to be of any benefit. The disease may be prevented by cutting the stalks early and feeding them only after they have been carefully cured and removed from the field.

CORNU, kôr'nu', JULIUS (1849—). A Swiss philologist, born at Basel. He was educated in Paris, taught Romance philology in

his native town, and in 1877 became professor in the University of Prague, later accepting the same chair at Graz. Among his works are: *Phonologie du Bagnard* (1877); *Glanues phonologiques* (1878); *Études sur le poème du Cid* (1881-1900); and the Portuguese grammar in Groeber's *Grundriss der romanischen Philologie*.

CORNUCOPIA (Lat., horn of plenty, from *cornu*, horn + *copia*, plenty). The horn of plenty (regarding the origin of which several fables are told by the ancient poets) is generally placed in the hands of figures emblematical of Plenty, Liberality, etc., who are represented as pouring from it an abundance of fruits, corn, etc. It is frequently used in both architecture and heraldry. On the arms of banks and other public institutions it is often represented as pouring forth coins. See AMALTHEA.

CORNUTUS, LUCIUS ANNEUS. A Stoic philosopher of the time of Nero. He was a native of Libya, but a resident of Rome. He was the teacher and friend of the poet Persius Flaccus, who left to him all his books and a large sum of money. He took the books, but gave the money to the sisters of the donor. Although he was a friend of Nero, the tyrant banished him because he did not like his advice about the number of books in which he (Nero) proposed to write the history of the Romans. Cornutus was a voluminous writer, both in Latin and in Greek, but little is known concerning his works. His treatise in Greek, *On the Nature of the Gods*, is extant; it deals with popular mythology as expounded by the Stoics. It is edited by Lang (Leipzig, 1881). Consult Arnold, *Roman Stoicism* (Cambridge, 1911).

CORNWALL (AS. *Cornuwallas* from Welsh, Ir., Bret. *corn*, horn, Lat. *cornu*, Gk. *képas*, *keras*, Goth. *hauru*, Eng. *horn* + AS. *weallas*, strangers, Welsh, *Wealh*, Ger. *uetsch*, foreign, Lat. *Volca*, name of a people). A maritime county forming the southwest extremity of England (Map: England, B 6). Its area is 1357 square miles, most of which is arable or in meadow and pasture. The mining of tin and copper is an important industry, and there are extensive pichard fisheries. The chief towns are Bodmin (the county town), Launceston, Penzance, Falmouth, and Truro. Pop., 1901, 318,591; 1911, 325,283. Cornwall is very rich in remains of some ancient culture. These comprise cromlechs or dolmens (q.v.), found chiefly in the Land's End district; uninscribed monoliths, circles, and avenues of stone, caves, cliff and hill castles. The products of the Cornish tin mines were famous in the ancient world, and furnished the Phenicians with one of their chief articles of trade. The absence of Eastern coins and inscriptions, however, has seemed to some to indicate that the Phenicians never set foot in Britain, but carried on their trade indirectly through Gaul. Consult, however, Holmes, *Ancient Britain and the Invasions of Julius Cæsar* (Oxford, 1907). After the Saxon Conquest Cornwall constituted part of the British Kingdom of Damnonia, which held out against the kings of Wessex till 926, when Athelstane captured Exeter. At the time of the Norman Conquest the Saxons were in full possession of the land. Christianity was introduced from Ireland, probably as early as the fifth century; there are numerous Christian remains, especially from the seventh and eighth centuries. The inhabitants maintained an independent

priesthood till the tenth century, when the country was annexed to the see of Canterbury. William the Conqueror gave nearly the whole of Cornwall to his half brother, Robert of Montain, who was followed by a line of powerful earls, of whom the most celebrated was Richard, the second son of John, elected in 1257 King of the Romans. In 1337 Cornwall was created a duchy for the Prince of Wales, by whom it has continued to be held. During the civil war the inhabitants of Cornwall were intensely loyal and supplied Charles I with some of his bravest soldiers. Royalist victories were won at Braddock Down (Jan. 19, 1643) and Stamford Hill (May 15, 1643). From Sudeley Castle Charles I, on Sept. 10, 1643, issued a proclamation to the people of Cornwall, thanking them for their great devotion. Copies of this letter are still to be seen in a number of churches. See CORNISH LANGUAGE AND LITERATURE.

CORNWALL. A port of entry and the capital of Stormont Co., Ontario, Canada, on the St. Lawrence River, the Cornwall Canal, of which it is the terminus, and the Grand Trunk and the Ottawa and New York railroads, 56 miles east-southeast of Ottawa (Map: Ontario, K 3). It has steamship connections with the principal Canadian ports. The public buildings include the town hall, a commercial college, and a high school. There are three parks. The town owns the water and sewerage systems and is supplied with electric light and gas. Electric and water power is available for manufacturing. The products of the manufacturing industries include cotton, furniture, bedsteads, chairs, paper, and lacrosse supplies. Cornwall lies in a mixed farming and dairying district. Good fishing and hunting abound, and there is a summer resort 8 miles distant, at Stanley Island. The town's lacrosse club is one of the foremost in the Dominion. The United States is represented by a consular agent. Pop., 1901, 6704, 1911, 6598.

CORNWALL. A village in Orange Co., N. Y., 52 miles by rail from New York City, on the west bank of the Hudson River, a little north of the Highlands, and on the New York, Ontario, and Western and the West Shore railroads (Map: New York, B 1). It is in a picturesque region, much frequented as a place of summer resort. Idlewild Park and Storm King Mountain are among the prominent points of interest. Just outside the village limits there is a large carpet mill, which employs some 500 persons. There are also municipal water works and a public library. Pop., 1900, 1966; 1910, 2658.

Cornwall was settled about 1684, became a precinct in 1764, a township in 1778, and was incorporated in 1885. From the original township, Highlands, Blooming Grove, and Monroe, besides parts of Chester and Hamptonburg, have since been taken. Consult Eager, *History of Orange County* (Newburgh, 1846-47), and Beach, *Cornwall* (Newburgh, 1873).

CORNWALL, BARRY. See PROCTER, BRYAN WALLER.

CORNWALL, EARL OF. See GAVESTON, PIERS.
CORNWALLIS, CAROLINE FRANCES (1786-1858). An English author, who was a linguist and a student of wide reading in various fields, and whose first work, *Philosophical Theories and Philosophical Experience*, by a Pariah, appeared in 1842. It was the first of a series entitled "Small Books on Great Subjects,"

which she had formed the idea of writing with the help of a few friends. Of the 22 volumes of this series, which appeared between 1842 and 1854, all the most important were written by herself. The subjects discussed were various—science, ragged schools, grammar, criminal law, Greek philosophy, etc. In 1864 appeared her *Letters and Remains*.

CORNWALLIS, CHARLES, first MARQUIS and second EARL (1738–1805). An English general and statesman. The son of the first Earl Cornwallis, he was born in London, Dec. 31, 1738. After an education at Eton and Cambridge he entered the army and served as aid-de-camp to the Marquis of Granby in the Seven Years' War. In 1760 he was elected member of Parliament for Eye, in 1766 received his promotion as colonel, in 1770 was made governor of the Tower of London, and in 1775 became major general. Though personally opposed to the war with America, he went with his regiment thither, and the first successes of the British arms were, in the main, due to him. After the battle of Long Island, in which he took a prominent part, he pursued Washington through New Jersey. A detachment of his army, consisting of Hessians, was captured by Washington at Trenton, Dec. 26, 1776, and part of his forces suffered a defeat at Princeton, Jan. 3, 1777. He had the principal share in the victory of the Brandywine, Sept. 11, 1777, after which he secured for the British the command of the Delaware River. In disgust at Howe's failure to grasp the critical situation of affairs and to attempt operations on a large scale, Cornwallis sent in his resignation, which the King refused to accept. He served under Clinton at the reduction of Charleston in 1780, achieved a great victory over Gates at Camden, S. C., on August 16 of that year, and defeated Greene at Guilford Court House, N. C., March 15, 1781. He was in the end outgeneraled by Greene and withdrew into Virginia, where he carried on a vigorous campaign against Lafayette, but without avail. Finally he was shut up in Yorktown by Washington and Rochambeau, aided by a French fleet under De Grasse, and was compelled to surrender on Oct. 19, 1781. With the surrender of Cornwallis the triumph of the American cause was virtually achieved. Although the disaster resulted in the resignation of the British ministry, Cornwallis escaped censure owing to royal favor. In 1786 he was appointed Governor-General of India and commander in chief and distinguished himself by his victories over Tipu Sahib and by his indefatigable efforts to promote the welfare of the natives. He returned from India in 1793, when he was raised to the rank of Marquis. Appointed Lord Lieutenant of Ireland, he succeeded in quelling the rebellion of 1798 and established order in a manner that gained him the good will of the Irish people. As Plenipotentiary to France he negotiated the Peace of Amiens. Reappointed Governor-General of India in 1804, he died at Ghazipur, in the Province of Benares, Oct. 5, 1805, on his way to assume the command of the army in the upper provinces.

Consult: Marshall, *Memoir* (Gateshead, 1806); Lord Cornwallis' *Correspondence*, ed. by Ross (London, 1859); Seton-Karr, "The Marquess Cornwallis," in *Rulers of India* (Oxford, 1890).

CORO, kó'rò, or **SANTA ANA DE CORO**. A city of the State of Falcón, Venezuela, situated east of the Gulf of Coro (Map: Venezuela, D 1). It

is engaged in cattle raising and is a centre for interior commerce. Coro contains several churches, interesting for their antiquity, though they either have been rebuilt or lie in ruins. La Vela, its port, which is 6 miles to the east, has a good harbor and a trade with the Dutch West Indies and is the residence of a United States consular agent. Population, 9452. Coro, one of the oldest cities in Venezuela, was settled by Juan de Ampués in 1527 and for a time was the Spanish capital of Venezuela. It was created the first bishopric of Venezuela in 1531, but subsequently the see was removed. Its decline dates from the transference of the governmental and ecclesiastical authorities to Caracas. It was the objective point of Miranda's first descent upon Venezuela in 1805, when he led an abortive expedition against the Spanish in the hope of precipitating the revolution of the Spanish-American colonies.

COROADO, kó'rò-á'dò (Portug., crowned, in allusion to a peculiar style of wearing the hair). A name without ethnic significance, applied by the Portuguese to several Brazilian tribes. The name "Coroados" (also Bugres) is now applied to the people formerly called "Zuayanás" (of Tapuyan stock), and known also as "Caingangs." These are "the dread Bugres of South Brazil," who inflicted such destruction upon the settler of the interior. They are to be distinguished from the "real Coroados" of the states of Minas and Matto Grosso.

COROLLA (Lat., garland, dim. of *corona*, crown). In flowers, the inner one of the two sets of floral leaves. The individual parts are called "petals," and they are usually delicate in texture and variously colored, forming the showy part of the flower. In case they are absent the flower is said to be "apetalous." The corolla is supposed to serve as an attraction to insects, so that the flower may secure cross pollination. See FLOWER.

COROLLARY (Lat. *corollarium*, deduction, gratuity, money paid for a garland, from *corolla*, garland). A proposition the truth of which appears so clearly from the proof of another proposition as not to require separate demonstration. For example, having proved that the angles at the base of an isosceles triangle are equal, it follows as a corollary that an equilateral triangle is equiangular.

COROMANDEL COAST (Skt. *Cōramanḍala*, from *Cōra*, or *Cōla*, name of a people + *mandala*, circle, kingdom). A region in British India in former times comprising the portion of the east coast of Madras lying between Point Calimere, in about lat. 10° 17' N., and the mouths of the Kistna, in about lat. 15° 40' N. (Map: India, D 6). The name is sometimes applied to the whole of the west shore of the Bay of Bengal. The coast has numerous inlets, but possesses no safe harbors. Ships are compelled to anchor several miles off the coast, which is visited by the northeast monsoon from October till April. The districts along the coast were the battlefields for supremacy in India between England and France in the eighteenth century.

COROMANDEL GOOSEBERRY. See CARAMBOLA.

CORONA (Lat., crown). In astronomy, the name given to the faint outermost luminous appendage of the sun, seen only during total solar eclipses, when the brilliant central disk is obscured. See SUN.

CORONÆ, in meteorology, are colored rings seen around the moon through peculiar forms of cloud. See **HALO**.

CORONA. In architecture, the upper part of the classical cornice, especially the shelf-like portion between the bed-molding and the cymatium. (See **CORNICE**.) The term "corona" is also applied, especially by ecclesiastical writers, to the apse or semicircular termination of the choir, as in the case of "Becket's crown," at Canterbury. Corona is also applied in ecclesiastical nomenclature to a chandelier, in the form of a crown or circlet, suspended from the roof of a church, or from the vaulting of the nave or of chapels, to hold tapers which are lighted on solemn occasions. Famous mediæval examples are those in Charlemagne's Palatine Chapel at Aix-la-Chapelle and in St. Michael's, Hildesheim.

CORONA. In plants, a word applied to any crownlike appendage at or near the summit of an organ. It is usually restricted, however, to appendages which occur in connection with corollas. For example, in the species of *Silene* and allied forms, members of the pink family, there is a two-lobed outgrowth at the junction of the claw and blade of each petal. Taking the petals together, these outgrowths form a 10-lobed crown at the base of the blades. In the passion flowers there is a very conspicuous corona consisting of many rows of filamentous outgrowths. Similar outgrowths are found in the flowers of other families, but are most notable in sympetalous corollas, where they form folds or projections in the throat, as in oleander, various borages, etc. In the several species of *Narcissus* the corona which rises from the throat of the corolla is often very conspicuous. In all cases these appendages are out-

high school and city hall buildings. There is also a splendid circular boulevard on which big automobile races are held annually. Corona is an important shipping point for lemons and oranges. Citrus fruit growing, alfalfa milling, and the manufacture of clay products and crushed rocks are the chief industries. Pop., 1900, 1434; 1910, 3540.

CORONA AUSTRALIS (Lat., Southern Crown). A small southern constellation, described by Ptolemy and consisting of stars of moderate brightness. It is situated between Scorpio and Sagittarius.

CORONA BOREALIS (Lat., Northern Crown). A small and bright northern constellation between Hercules and Boötes. The arrangement of six of its principal stars, the brightest of which is of the second magnitude, in the form of an almost perfect semicircle renders it easily recognizable. In 1866 a *nova*, or temporary star, known as "T Corona," was discovered by Birmingham in this constellation. At first of the second magnitude, nine days after its discovery it was again invisible to the naked eye; it still exists as a star of the tenth magnitude. It is worthy of note as the first *nova* to which the then novel methods of stellar spectrum analysis were applied.

CORONACH, kōr'ō-nāk. See **CORONACH**.

CORONA CIVICA. See **CROWN**.

CORONA CONVIVALIS. See **CROWN**.

CORONADO, kō'rō-nā'dō (Sp., crowned). The name among Spanish-speaking fishermen of the West Indies and Mexico for the amber fishes of the genus *Seriola*. See **AMBER FISH**.

CORONADO, FRANCISCO VÁSQUEZ (?-c.1549). A Spanish explorer. He came to the New World about 1535, and, by marrying Doña Beatriz, the daughter of Estrada, the royal Treasurer for New Spain, secured preferment at the viceregal court in Mexico. He was appointed Governor of the Province of New Galicia, and in 1539 secured the command of an expedition for the conquest of the "Seven Cities of Cibola," which the friar Marcos de Niza claimed to have discovered on a preliminary expedition earlier in 1539. On Feb. 23, 1540, Coronado started from Compostela with a large force of horsemen, infantry, and native allies, supplied with artillery and abundant munitions and food. He followed the western coast of Mexico till some distance beyond Guaymas and then crossed the mountains into southeastern Arizona. On July 7 he reached and stormed the chief city of Cibola, the stone pueblo of Hawikuh, now represented by large ruins a short distance west of the pueblo of Zúñi, in New Mexico. Making this his headquarters, Coronado sent expeditions to the West, which explored the country as far as the Moqui villages of Tusayan, and to the Grand Cañon of the Colorado, which was first seen by Europeans when the soldiers under López de Cárdenas reached it early in September, 1540. Other parties explored towards the east, and in September, Coronado moved his forces to the Rio Grande, camping in the village of Tiguex, near Bernalillo, New Mexico. During the winter the natives of the river villages were subjugated after a fierce resistance. In April, 1541, Coronado led his whole army across the mountains into the great Buffalo plains of Arkansas and Indian Territory. Finding that he was being misled by a native guide, he sent his foot soldiers back to the Rio Grande, while he, with 30 horsemen, pushed northward, hop-



CORONA (p) OF NARCISSEUS.

growths from the inner face of the petals, and it has been suggested that they are the equivalents of similar outgrowths from the inner face of grass leaves, at the juncture of the blade and sheath. In this latter case the appendage is called a "ligule."

CORONA. A city in Riverside Co., Cal., 48 miles southeast of Los Angeles, on the Santa Fe and the Pacific Electric railroads (Map: California, H 9). The city contains a Carnegie library, Woman's Improvement Club, and fine

ing to find a country rich in treasure. In July he reached a group of teepee villages, somewhere near the border line between Kansas and Nebraska. Convinced that the country contained nothing of value for him, although he recognized its splendid agricultural possibilities, Coronado returned to Tiguex. A severe fall from his horse induced Coronado to turn homeward in the spring. After several months of deprivation he reached Mexico with such of his army as had not deserted along the route. The Viceroy received him coldly and allowed him to resign the government of New Galicia. Coronado lived quietly on his ample estates until his death, about 1549. The original documents describing Coronado's journey, which contain much information concerning the southwestern United States at the time it was first visited by Europeans, are translated in Winship, "The Coronado Expedition," in the *Fourteenth Report of the United States Bureau of Ethnology* (Washington, 1896). Consult also Winship, *Journey of Coronado* (New York, 1904).

CORONA FUNEBRIS. See CROWN.

CORONA MURALIS. See CROWN.

CORONA NATALITIA. See CROWN.

CORONA NUPTIALIS. See CROWN.

CORONA OBSIDIONALIS. See CROWN.

CORONA SACERDOTALIS. See CROWN.

CORONA SEPULCHRALIS. See CROWN.

CORONATION (from Lat *coronare*, to crown, from *corona*, crown). The act or ceremony of crowning the sovereign of a monarchical country. The use of crowns in antiquity, as a mark either of honor or of rejoicing, will be explained under CROWN. It was, no doubt, as an adaptation of this general custom to a special use that the practice of placing a crown on the head of a monarch at the commencement of his reign was introduced. The practice is very ancient, as we may learn from the fact that Solomon and Ahaziah were crowned, and it has been followed, in one form or another, in most civilized monarchies. The ceremony is religious as well as political and is usually performed by a high ecclesiastic, as a recognition that "the powers that be are ordained of God." Generally it has been accompanied by what was regarded as the still more solemn rite of anointing with oil—a ceremony which, from the time of the ancient Hebrews to our own, has been peculiarly significant of consecration or devotion to the service of God. The term employed for "crowned" in the Saxon chronicle is *gehalgod*, 'hallowed' or 'consecrated'; and it would seem that the ceremony as then performed at Kingston-on-Thames or Winchester was the same in all essentials as that which now takes place in Westminster Abbey.

In the early days of the European monarchies coronation was an indispensable rite, without which no accession to a throne would be recognized by the people; but in our day, the line of succession being clearly established, the ceremony is often deferred without prejudice to the loyalty of the subject. In most countries a solemn pledge, known as the "coronation oath," is exacted from the new sovereign as an indispensable preliminary to coronation. There are very early traces of this, both among the Jews and among the rulers who established themselves upon the ruins of the Roman Empire. Before the principle of hereditary succession was firmly established, the consent of the people was an important factor in a transfer of sov-

erignty and was purchased by the solemn pledge to rule justly and to preserve every man's rights. The present English coronation oath is the most definite and carefully considered agreement of the kind. After the revolution of 1688 it was made more explicit than ever, including an express engagement on the part of the sovereign to maintain "the laws of God, the true profession of the Gospel, and the Protestant reformed religion as it is established by law." The terms of this declaration were long resented by Roman Catholics in England, and finally, in 1910, the Accession Declaration Act was passed, which substituted a short formula for the objectionable clauses. The formula now runs: "I, ———, do solemnly and sincerely in the presence of God, profess, testify, and declare that I am a faithful Protestant, and that I will, according to the true intent of the enactments which secure the Protestant succession to the Throne of the Realm, uphold and maintain the said enactments to the best of my powers according to law." The oaths of other countries are neither so elaborate nor so specific as that of England.

For a learned treatment of coronation usages in general, as well as for a typical modern instance, consult Pascoe, *The Pageant and Ceremony of the Coronation of their Majesties King Edward the Seventh and Queen Alexandra* (New York, 1902).

CORONATION, THE. A play licensed by Shirley in 1635. It was, however, wrongly included in the earlier editions of Beaumont and Fletcher, as theirs.

CORONATION CHAIR. The ancient throne used at the coronation of English kings since Edward I. It is kept in a fair state of preservation in Westminster Abbey. Beneath the seat rests the famous Lia Fail, the Stone of Destiny, on which Scottish kings were crowned. The stone is said to be the one used by Jacob as a pillow and to have been taken to Tara in Ireland in the fifth century B.C., whence it was brought to Scotland and removed to England by Edward I.

CORONATION GULF. An inlet of the Arctic Ocean, penetrating the continent of North America, north of the Arctic circle, and included between long. 107° and 116° W., Bathurst Inlet being an extension towards the southeast. It is connected with other Arctic channels by Dease Strait on the northeast and Dolphin and Union Strait on the northwest (Map: America, North, G 3). It is studded with islands and receives the waters of the Coppermine River from the south.

CORONATION OATH. See CORONATION.

CORONEL, kó-ró-nel' (Sp., from Lat. *corona*, pertaining to a crown, from *corona*, crown). A port in the Province of Concepción, Chile, situated on the Bay of Arauco (Map: Chile, C 11). It is the commercial centre for the highly productive coal-mining district in the vicinity and is a coaling station. Pop., 1895, 2292; 1907, 5,258.

CORONELLI, kó-ró-nel'le, MARCO VINCENZO (1650-1718). An Italian geographer, born in Venice. He became a monk and devoted himself to cosmography in Venice. He then went to Paris, where he was commissioned by Louis XIV to construct two large globes 4 meters in diameter, which are in the Bibliothèque Nationale in Paris. They are considered among the greatest curiosities of the science of the seven-

teenth century. In 1685 Coronelli returned to Venice, was made geographer of the Republic in 1702, and in that capacity published a number of maps and histories. His works include *Isola di Rodi, geografica, storica, antica e moderna* (1685-1702), and *Memorie istorico-geografiche del regno della Morea* (1685).

CORONER. A very ancient and important county officer in England, Ireland, and Wales, whose original duty appears to have been that of keeping, as distinguished from holding, the pleas of the crown; for coroners are designated in the earliest charters alluding to the office as *custodes placitorum coronæ* and *coronatores*. The exact date of origin of the office is not known, but the better modern view is that it was firmly established under Henry II in the twelfth century. From England the office of coroner has found its way to the United States and the self-governing English colonies.

The chief duty of the coroner was described by Lord Chancellor Campbell as follows: "The coroner, next to the sheriff, is the most important civil officer in the county, and he performs the duty of the sheriff when the sheriff is disabled from doing so; and there are peculiar duties prescribed to him, more particularly to inquire into the manner in which persons have come to their deaths where there is any reason to suppose that it may not have been by natural means; and, on the inquiry, the jury being sworn, the jury have all the rights of a grand jury to find a verdict of murder, and on that finding the accused may be tried and may be sentenced to death." The coroner's duties in respect to this inquiry as to suspicious deaths has hardly varied at all from the fourteenth century to the present time, except as regards the methods of procedure, such as summoning jurors, witnesses, etc.

Besides his duty of inquiring into causes of suspicious deaths, his other peculiar duties included that of inquiring concerning various classes of personal property, such as treasure-trove, wrecks. The goods thrown away by a thief in his flight (known as "wairs"), to which the crown laid claim; the holding of inquests on certain felonies, such as the breaking of a house and the sudden injury of a person under suspicious circumstances. Until 1888, in England, the coroners were chosen by the freeholders at a county court held for the purpose, but by the Local Government Act of that year the county council were made the electors. The coroner is also *ex officio* a conservator of the King's peace, and in this capacity may act as a magistrate; his ministerial office is exercised only when he acts in place of the sheriff.

In the United States and in some of the colonies of Great Britain the duties and powers of coroners have been enlarged or restricted, and in some cases the office has been entirely abolished. The coroner is vested by statute in some jurisdictions with the power and duty to investigate into the causes and origins of fires which appear to be of incendiary origin or of such a nature as to require investigation; but *ex officio* the coroner has no authority to inquire into the cause or origin of a fire except when death has resulted from it.

For a fuller description of the manner of choosing coroners and of their duties and powers, the statutes of the jurisdiction must be consulted.

Consult: *Encyclopædia of the Laws of Eng-*

land, vol. iii (London, 1897); Binmore, *Instructions for Sheriffs, Coroners, and Constables* (2d ed., Chicago, 1894); Borden D. Smith, *Powers, Duties, and Liabilities of Sheriffs, Coroners, and Constables* (2d ed., Albany, 1897); Jarvis, *Office and Duties of Coroners, with Forms and Precedents* (5th ed., London, 1888); Stephen, *History of the Criminal Law* (ib., 1883); Pollock and Maitland, *History of English Law* (2d ed., London and Boston, 1899); Boys, *Treatise on Coroners* (Toronto, 1893).

CORONET. A special crown worn by princes and nobles on state occasions and always represented above their coats of arms. Coronets were apparently intended originally as fillets to confine the hair, and during the reign of Edward III, when they were not yet used as distinctions of rank, were ornamented with leaves. Later they came to be recognized as distinctions of nobility, but were assumed arbitrarily without royal warrant or restriction as to use. In more modern times they have been strictly regulated, especially in England. The following rules apply to that country: the coronet of the Prince of Wales differs from the crown of England only in having a single instead of a double arch; a duke's coronet has on the rim eight strawberry leaves of equal height; that of a marquis, four strawberry leaves and four pearls or balls of silver, alternately; that of an earl, eight pearls set on lofty spikes, alternating with strawberry leaves set lower; that of a viscount has 14 or 16 pearls close together; that of a baron, six pearls. The privilege of wearing coronets was first granted to viscounts by James I and to barons by Charles II. The French rules are essentially the same.

CORONINI-CRONBERG, kō'rō-nē'nē-krōn-bērk, FRANZ, COUNT VON (1833-1901). An Austrian statesman, son of the following, and one of the early companions and schoolmates of Emperor Francis Joseph. After studying philosophy and law, he entered the army in 1850, served in the campaigns of 1859, 1864, and 1866, and was promoted to the rank of colonel in recognition of his distinguished services at the battle of Königgrätz. He was President of the Chamber of Deputies from 1879 to 1881 and in 1882 founded the Coronini Club (Liberal Centre). He became a member of the Upper House in 1897.

CORONINI-CRONBERG, JOHANN BAPTIST ALEXIUS, COUNT VON (1794-1880). An Austrian general, father of the foregoing, born at Gorz. He entered the army in 1813 and participated in the campaigns of 1813 and 1814. After serving for several years in Italy, he was in 1836 appointed chamberlain of the Archduke Francis Charles, in which capacity he became preceptor of the Emperor Francis Joseph. As major general he defended the passes of the Tirol against the Italians in 1848, and in the Crimean War (1854) was intrusted with the chief command of the army of occupation in Wallachia. He was commanding general in Upper and Lower Austria, Salzburg, and Styria in 1860, and in 1861 was appointed to the same position in Hungary. He retired in 1865.

COROT, kō'rō, JEAN BAPTISTE CAMILLE (1796-1875). A French landscape painter, born in Paris, July 17, 1796. His father was a petty official who married a milliner and by shrewd management of her business gained a competence. Camille was educated in the college in Rouen and at a school in Poissy, and on his return to Paris was apprenticed to a draper,

in accordance with his father's wishes. But trade had no charms for him, and in the meanwhile he had acquired a taste for painting. After seven years of apprenticeship with the draper he resolved to be a painter. Upon the death of his sister his father made over to him her allowance, upon which Camille managed to subsist until financial success crowned his efforts. He first studied with Michallon, and upon the latter's death with Victor Bertin, a Classicist and an apostle of the historical landscape. The years 1825 to 1827 he spent in Italy, and in the latter year he made his debut at the Salon with two Italian landscapes—a "View of Narni" and the "Campagna at Rome." He again went to Italy in 1834 and in 1843, besides traveling in France, Switzerland, the Netherlands, and England. But the greater part of his life was passed in Paris and Ville d'Avray, in the forest of Fontainebleau and the valley of the Seine. In these places he found subjects for his most beautiful pictures.

It was some time before his works were recognized, but in his later life honors were heaped upon him. He received medals in 1848, 1853, and 1857; in 1846 he received the cross of the Legion of Honor, and in 1867 he was made a commander. The younger artists almost worshipped him, and in 1874 his friends gave him a gold medal to atone for the neglect of the Salon. Dealers sought his pictures, and it is said that in the time of his prosperity his income from sales alone amounted to 200,000 francs a year. But Corot never cared for money except to help his friends, which he did with a lavish hand. He was gentle, jovial, and kind, and the figure of Père Corot, in his blue blouse and woolen cap, with his long white hair and the inevitable pipe, brought joy and sunshine. He never married, but was devotedly attached to his sister and his mother. He died in Paris on Feb. 22, 1875.

Corot's art naturally falls into two periods, divided from each other by about the year 1843. During the first of these he painted like the contemporary Classicists, very detailed, with careful and severe drawing, but not without a certain charm of color. The influence of this classical training may be seen in the nymphs with which he loved to people his landscapes, and the absolute mastery over technique which we see in his second period. This may be said to have begun with his return from Italy in 1843, when he adopted the method of painting in the open air, which had been introduced from England by Constable and others. The works of his second period are the works from which we chiefly know him and which made him famous.

Corot was the great lyric poet of the Barbizon school, as Rousseau was the epic, and Dupré the dramatic. As Rousseau portrayed the strong and vivid side of nature—the oak, of all the trees, the plains, the hills, the river, and the forest—so Corot painted the tender, the wavering, the feminine side—the poplar, the birch, the willow, the wild flowers, sweet and shrinking. He was a painter of the misty morning and of the shadowy evening, of the hazy springtime. A light mist or a haze of atmosphere usually envelops his pictures. As with Rousseau drawing was the most important feature, so with Corot it was the tone and values of color. His pictures are always in a low key: browns, pale greens, and silvery grays are among his favorite colors, but in this sad setting the occasional

touches of bright color appear all the more effective. His values are perfect, and, above all, each picture is an expression of deep sentiment—"the confession of a beautiful soul." His works have well been called "painted music," and it is no accident that he was himself a gifted musician.

His landscapes have often been criticized because of their similarity, but they are only similar in theme; the treatment is infinitely varied. It has also been urged that his works are too even; that they do not contain certain acid tones and little defects which are found in nature and add to the effect of the picture. Such blemishes might indeed have made his work more realistic, but they would not have harmonized with the softness and delicacy of effect, which it was his chief effort to obtain. As regards the figures which usually form a part of his picture, whether they be nymphs and goddesses or French peasants, they rather heighten the effect of the landscape than otherwise, and with it they are always in perfect harmony. So great was his technical ability and so vivid his imagination that his usual method was to paint his works in his studio from sketches and notes taken from nature.

Corot has left a large number of works on a great variety of subjects. During his early period he painted many Italian landscapes and even religious subjects. Of these landscapes there are two good examples which he himself bequeathed to the nation, viz., the "Roman Forum" and "The Coliseum"; the latter is now in the Louvre, which also possesses "The Bridge of Narni" (1827). Of his religious pictures the "Baptism of Christ," in the church of St. Nicolas du Chardonnet in Paris, is a good specimen, and the Walters Gallery, Baltimore, the Havemeyer collection, New York, and the Boston Art Museum contain examples of his historical compositions. The landscapes of his later period are incomparably his best works. Among the best known is the "Dance of the Nymphs" (Louvre), a fresh morning scene of a peculiar blue tone, and the incomparable "Paysage," in the same collection, showing his marvelous treatment of a lake with overhanging foliage. There are about 80 of his pictures in the Louvre, including, besides those mentioned, "Morning" (1850), "Souvenir of Castelgandolfo" (1855), the "Road of Sin-le-Noble" (1874), and "The Fisherman." Other good examples are in the provincial museums and private collections of France and indeed of all Europe. Corot is especially well represented in the United States. The Metropolitan Museum in New York possesses three good examples, including "Ville d'Avray," a fine specimen of Corot's dainty treatment of water, foliage, and distant buildings in the early morning light. The faint rose of the sky suggests the coming dawn, and the touches of yellow and blue in the garb of the woman lend a soft brightness to the scene. There are other good examples in the Vanderbilt collection (Metropolitan Museum) and the Corecoran Gallery at Washington, in the Art Institute of Chicago, and the Walters Gallery, Baltimore. But not until the centenary exhibition in Paris in 1889 did men know what modern art possessed in Corot, "the greatest poet and the tenderest soul of the nineteenth century."

Bibliography. The principal authority for Corot is the monumental work of Robaut, *L'Œuvre de Corot* (4 vols. fol., Paris, 1905),

with admirable illustrations and a complete list of his paintings. Briefer biographies, with account of his work, are by Rousseau (ib., 1884); Roger Miles, in *Les artistes célèbres* (ib., 1891); Robinson, in *Van Dyke's Modern French Masters* (New York, 1896); Michel (Paris, 1905); Hamel (ib., 1905); Cornu (ib., 1911). Consult also: Alexandre Geoffroy, *Corot and Millet*, with critical essays (New York, 1903); Meyer-Graefe, *Corot et Courbet* (Leipzig, 1905); Gensel, *Corot und Troyen* (Bielefeld, 1906); Meynell, *Corot and his Friends* (New York, 1910); Muther, *History of Modern Painting* (London, 1907), and the bibliography under **BARBIZON PAINTERS OF**.

CORPORAL (Fr. *caporal*, It. *caporale*, corporal, from *capo*, head, from Lat. *caput*, head; influenced by popular etymology with *corporal*, bodily, or *corps*, body of troops). A military title of similar relative noncommissioned rank throughout the armies of the world. In the United States it is the lowest noncommissioned rank. It may be preceded by the appointment of lance corporal, given to private soldiers desirous of and selected for promotion. In the British navy the term "ship's corporal" is applied to a petty officer who takes orders from the master at arms.

CORPORAL (Lat. *corporale*, from *corpus*, body, because the host or sacramental body of Christ rests upon it). A square linen cloth which is spread upon the altar during the mass and upon which rest the chalice and paten. It was originally large enough to be folded over the chalice, but this was later displaced by a separate piece, now known as the pall (q.v.). The older usage was long preserved in the French church and is still the custom in the Carthusian Order. Both corporal and pall must be blessed, and when not in use are carried in the burse, a square pocket of cardboard covered with silk, none except those in holy orders being allowed to touch them when they are in use.

CORPORAL, THE LITTLE (Fr., *Le petit corporal*). A term of familiarity and affection applied by the French soldiery to Napoleon I, who began his military career as a *sous-lieutenant* in Corsica.

CORPORAL PUNISHMENT. Punishment by the infliction of pain or hardship upon the body, as by confinement in the stocks, branding, or flogging. Ordinarily the term is understood to refer only to flogging or whipping of the body.

Much has been said for and against this last kind of punishment, as a means of both public and private correction. The contention of those who oppose its use and deny its value is that it degrades the one punished and the one who executes the punishment, and that it tends to deteriorate the character of the person punished by taking away his self-respect. Those who favor it generally admit that severe floggings which lacerate the body or which are so contrived as to cause extreme agony, as in the *bastinado*, do cause a degeneration in the moral character of the victim which increases his tendency to repeat his offense or commit others in spite of the danger of the second punishment, and that this is especially the case when such punishment is inflicted publicly. But the practice is supported by the argument that whipping which produces stinging but transient pain, without mangling the body and without such public disgrace as to destroy the sense of shame,

is an efficient corrective for those cruel or brutal or intractable offenders, such as wife and child beaters, who are insensible to the punishment of confinement or other ordinary penalties. Corporal punishment at the hands of public officers as a punishment for crime is usually inflicted by flogging in prison or at the public whipping post. The practice has generally been abandoned in civilized communities, though it still survives in England and in many American States as a means of discipline of convicts confined in prisons. Further information will be given under the titles **CAT**; **FLOGGING**; **WHIPPING**.

The authority of the husband, parent, guardian, and schoolmaster to inflict corporal punishment upon the wife, child, or pupil will be considered under **HUSBAND AND WIFE**; **GUARDIAN**; **WARD**; **PARENT AND CHILD**; **SCHOOLMASTER**; **ETC.** See also **APPRENTICE**. For a bibliography of corporal punishment as a punishment for crime, consult the authorities referred to under **PENOLOGY**; **CRIMINOLOGY**.

CORPORAL TRIM. An old soldier, the servant of Uncle Toby in Sterne's *Tristram Shandy*.

CORPORAL VIOLET, or **FATHER VIOLET**. A name given to Napoleon Bonaparte by his adherents in France when he was in exile. The violet typified the Empire, which, in the person of Corporal Violet, it was predicted, would return in the spring.

CORPORATION (Lat. *corporatio*, from *corporare*, to embody, from *corpus*, body; the classical terms were *corpus*, *universitas*, *collegium*).

Roman and Civil Law.—The legal conception of the corporation was clearly worked out at Roman law. As a ship remains the same ship, although all its parts be gradually renewed by successive repairs; as a human body remains the same body, although waste and repair periodically change all its minutest particles, so a body of human beings, like a bench of judges, a legion, or the Roman people, remains the same body in spite of all changes in its composition. In all cases in which such a body of persons is recognized as a separate legal entity—in all cases, i.e., in which the body itself is regarded as owning property, holding claims, and owing debts—a *corpus* or *universitas* exists; where, on the other hand, the members of an association are treated as joint proprietors, joint creditors, and joint debtors, all that exists is a *societas* or partnership.

The Roman law recognized both *private* and *public* corporations. Private corporations (at least in the Imperial period) could not be established except by special authorization or under certain general statutes. In the field of public law the towns (*municipia*), or, rather, the town councils (*collegia decurionum*), were regarded as corporations; and the Imperial treasury (*fiscus*) was recognized as an entity distinct from the Empire. From this latter theory was derived the valuable conclusion that the *fiscus* could be sued by private persons to recover property or enforce contractual claims. Charitable corporations were recognized; when the Empire became Christian, churches and monasteries received the rights of corporations; but where property was devoted to a permanent charitable use (*pia causa*) it was not necessary to give it to an existing charitable corporation nor to create a new corporation to hold it. The Roman law did not treat the persons who administered such property as titular owners sub-

ject to a trust, nor was it usual, as at English law, to incorporate boards of managers and to treat the corporations thus created as owners of the property. The Roman law, in its final development, treated the foundation itself as a legal entity, and viewed the persons who managed the property as mere officers and representatives of the foundation.

Modern civil law uses these Roman conceptions without substantial change. The German jurist Gierke, indeed, maintains that mediæval German law developed, and modern jurisprudence is bound to recognize, a third type of association, intermediate between corporation and partnership, which he terms the *fellowship* (*Gemossenschaft*); but his theory has obtained no legislative or judicial recognition. The German civil code (1896) declares that "societies which are not incorporated are governed by the rules relating to partnership."

As regards the theory of the "juristic person," modern civilians generally regard corporations and foundations as persons only by virtue of a legal fiction. This legal fiction is generally regarded as useful and indeed necessary, but a few writers regard it as unnecessary and harmful. These assert that a corporation is nothing but a plurality of natural persons acting under special rules as regards presentation (i.e., agency) and governed by special rules as regards succession, and they assert that harm is done by obscuring the fact that the private corporation is simply a particular method in which natural persons hold property and do business. Still another school maintains that permanent associations, public and private, have a character and a will which are not the sum or the resultant of the characters and wills of the individuals who compose them, and that such associations have thus a true personality which the law does not create, but merely recognizes. This is sometimes described as the anthropomorphic theory.

English Common Law.—Three distinct factors are to be recognized as essential to the existence of a corporation: (1) one or more natural persons, who are the incorporators, or so-called members; (2) one or more trustees, managers, or directors, who have the general control of its affairs and may or may not include all, and be coincident with, the incorporators; and (3) the corporation, or artificial person, created by the fiat of the law, and always separate and distinct from both its members and its trustees or managers. It is this separate existence, as a legal entity, which distinguishes it from a partnership and from a joint-stock company.

Classification.—Corporations are classified as to either the number of members, or the objects for which they are formed, or the fullness and completeness of their powers. With regard to the number of members, they are either *aggregate* or *sole*. An aggregate corporation has more members than one and is the more common form. A sole corporation consists of a single member and his successors, who are by law invested with the same capacities as an aggregate corporation. Thus the King of England, or a bishop, is a sole corporation. A very few sole corporations exist in the United States. In New York, e.g., a joint-stock company composed of seven or more members may sue and be sued in the name of its president, and the president is for this purpose a sole corporation.

With respect to the purposes of their existence corporations are classified as *ecclesiastical* and *lay*, and the lay are subdivided into *civil* and *eleemosynary*. Ecclesiastical corporations are concerned wholly with religious matters, including the management of ecclesiastical property, and are composed wholly of spiritual persons, as distinguished from laymen. There are none such, properly so called, in the United States. An eleemosynary corporation is one formed for purposes of charity, in the legal sense of that word, i.e., general public benefit and utility. Examples are found in schools, colleges, and hospitals. *Civil corporations* are those that are formed for temporal purposes. They are either (1) *public*, or *municipal*, i.e., created for governmental purposes, such as cities and villages; or (2) *private*, including others of a civil nature, such as railroad companies and manufacturing and general business corporations. Since municipal corporations are part of the machinery of government, they may be dissolved, restricted, or modified at the will of the legislature; but an act which creates a private corporation has in the United States been deemed to be in the nature of a contract, and (because of that provision of the United States Constitution which forbids the States to pass any laws impairing the obligation of contracts) cannot be repealed or materially altered or impaired without the consent of the corporation. This doctrine of the inviolability of a corporate charter rests upon the authority of the celebrated Dartmouth College Case (q.v.). The operation of this rule is obviated in some States by constitutional provisions, or by special clauses in the acts creating corporations, to the effect that the legislature shall have power to abrogate or modify such acts. The divisions of corporations with reference to their powers is into *complete* and *quasi*. Those are *quasi* which possess some, but not all, of the ordinary powers of a corporation. Counties, school districts, and in some States, as New York, towns, afford examples of *quasi* corporations.

Corporations are created by charter or letters patent from the crown, by legislative act, and by prescription. Some corporations which trace their origin to royal charter exist in the United States; while others may be found which derive their franchise from immemorial usage or prescription; but the most common mode of forming them is by act of the legislature. This latter method is either by special act or charter, or by a general law which enables persons so desiring, by conforming to prescribed conditions and formalities, to become *ipso facto* a corporation. The formation under a general law is most favored, and is made mandatory by the constitution of some of the States.

Corporate Powers.—The powers of a corporation are those given by its charter, or the general law under which it is organized, or fixed and determined by usage when it exists by prescription, together with those which are implied by law as reasonably necessary or proper to enable it to exercise its express powers and to realize the objects for which it exists. They generally include the power to make contracts, to sue and be sued, to hold property, to have a corporate seal, to make by-laws, and to elect and remove members and officers. If a corporation exceed its proper functions, it is said to act *ultra vires*. An *ultra vires* act is, according to the weight of authority, void; but money

paid, or the value of property given, to a corporation under an ultra vires contract may be recovered. In a few jurisdictions, e.g., New York, if the person dealing with a corporation has performed on his part an ultra vires contract, the corporation is held to be estopped from setting up its want of power. (See *ESTOPPEL*.) Corporations have been held liable for torts resulting from their negligent performance of an act, whether authorized or unauthorized, and it is now generally held that a corporation may be liable for any tort, the malice or negligence of the agent being imputed to the corporation. It was formerly held that a corporation could legally perform no act except under its corporate seal, but it may now act without a seal where natural persons may do so. The quantity of land which a corporation may hold is usually fixed by its charter, or a general law, and is commonly restricted in this country to so much as is necessary for the proper performance of its authorized functions.

Public Control of Corporations.—The right of visiting a corporation, conferred by charter or legislative appointment, is that of exercising legal superintendence and control over its actions. It is an absolute, summary power which is not reviewable by the courts, unless its arbitrary exercise would result in gross injustice. It is strictly applicable only to ecclesiastical and eleemosynary corporations; the visitor of the former being the bishop of the diocese, and of the latter, the founder and his heirs, or persons appointed by the founder. In the United States the visitors of charitable corporations are usually their trustees, the right of visitation being determined wholly by statute. Civil corporations are subject to the general law, and are amenable to the process of the courts, and for misuse of powers or flagrant wrongs may be dissolved by proceedings instituted in behalf of the State.

A corporation may be dissolved by legislative act, by judicial decree, by surrender of its franchise and acceptance of the same by the State, or by the death of so many members that enough are not left to elect new members pursuant to its charter. The power to dissolve by legislative act is unlimited in England, but in the United States it is restricted as pointed out above. A judicial decree dissolves for the violation of the conditions of the charter or the law under which it exists. Upon dissolution the property of the corporation becomes a trust fund for the benefit of the State or the stockholders, usually the latter. If the institution were charitable, this fund is administered by new trustees appointed by the court.

Strictly speaking, a corporation can have no legal existence outside the jurisdiction of the sovereignty under which it was created. By a legal fiction, however, and by the comity of nations and states, a corporation is held to exist legally wherever it is doing business, and it may sue and be sued, acquire property, etc., outside of the state of its creation by authority of the foreign state in which it is operating and subject to such restrictions as the latter may see fit to impose.

Citizenship of a Corporation.—Under the Constitution of the United States a corporation is deemed not to be a citizen of a State, so that it cannot as a foreign corporation claim equal protection of the law with the citizen of a State other than the State of its creation. It follows

that a State may impose any terms as a condition of a foreign corporation doing business within the State, provided it does not interfere with the corporation's constitutional right to carry on interstate commerce. A corporation, however, is a citizen within the meaning of the clause of the Constitution conferring jurisdiction on the Federal courts, and it may sue or be sued in the Federal courts, and may in a proper case remove a cause from a State to a Federal court. Consult: Angell and Ames, *Treatise on the Law of Private Corporations* (Boston, 1882); Cook, *Treatise on the Law of Corporations Having a Capital Stock* (Chicago, 1898); Thompson, *Commentaries on the Law of Corporations* (San Francisco, 1895-99); Clark and Marshall, *Treatise on the Law of Private Corporations* (St. Paul, 1901); Purdy, *Treatise on the Law of Private Corporations* (Chicago, 1905). See CHARTER; CERTIFICATE; DARTMOUTH COLLEGE CASE; CONTRACT, CITIZEN; ETC.; MUNICIPAL CORPORATIONS and its bibliography; and for the treatment of the subject of corporations in its relation to civil and Roman law, see article on CIVIL LAW. Consult also such general treatises as those of Kent and Blackstone.

CORPOSANTS. See CASTOR AND POLLUX.

CORPS, *kör* (Fr. *corps*). A military term denoting a body of officers, or officers and men, generally a distinct military organization, as the signal corps, corps of engineers, and the coast artillery corps, in the United States army; and the various battalions of volunteers throughout England, locally known as the volunteer corps. More specifically it applies to the corps d'armée, or army corps, which in the United States formerly consisted normally of about 25,000 men, divided into three divisions, each of three brigades of three regiments of infantry, with cavalry and artillery in proportion, commanded by a lieutenant general or major general. The term "army corps" was abolished in the British army in 1906. In the United States army the corps has been replaced by the field army, consisting of two or more divisions, and is the appropriate command of a lieutenant general. Some European armies are organized by combining army corps of varying strength and composition. (See ARMY ORGANIZATION.) In the navy it is used in the first sense; as the medical corps, the pay corps, the marine corps, etc. See NAVY.

CORPS DIPLOMATIQUE, *kör dé'plô'ma'ték'* (Fr., diplomatic body). The entire body of foreign ambassadors and diplomatists assembled at the court, or the capital, of a country.

CORPSE (OF., Fr. *corps*, body, from Lat. *corpus*, body). A dead human body is not property in the ordinary commercial sense of the term. In the absence of a statute authorizing it, a contract for the sale of such a body is void, as tending to outrage decency, humanity, and sound public policy; and an officer who seizes or holds the body under any legal process issued against the person while living is guilty of a criminal offense. But while a dead body is not property, it is the object of certain well-defined rights. The possessor of these rights is the surviving husband or wife, or the next of kin of the deceased, unless the deceased has made a valid disposition of his body by will. Accordingly, if one mutilates a dead body, or prevents its burial, or unlawfully interferes with it after burial, he may not only be punishable criminally,

but be liable in an action for damages to the husband or wife, or next of kin, of the deceased.

Controversies between persons as to the place of burial of a dead body, or as to its proper treatment, are within the jurisdiction of a court of equity in the United States and are not subject to ecclesiastical decision, as has from an early period been the case in England. This is upon the theory that the rights in a dead body are in the nature of a sacred trust, in the proper performance of which all are interested who were allied to the deceased by family ties.

Not only is a dead human body the object of legal rights, but it is also the object of legal duties on the part of the living. The husband or the wife, or the nearest of kin, or, in the absence or poverty of these, a stranger under whose roof a death occurs, is bound to give the body of the deceased a decent burial. Any one who casts it away without funeral rites or indecently exposes it is liable to criminal punishment. On the other hand, the expenses of a proper burial have priority over every other claim against the estate of the deceased. Consult the authorities referred to under *SALE (of personal property)*. See *BURIAL*; *BODY SNATCHING*.

CORPUS LÉGISLATIF, kōr' lā'zhé'slā'téf' (Fr., legislative body). The name of the Lower House of the French national legislature from 1852 to 1870. The number of members was 251, elected by universal suffrage for a term of six years. They were largely the creatures of Napoleon III. Consult the histories of the period by Granier de Cassagnac, Taxile Delord, Beaumont-Vassy, and De la Gorce. See *FRANCE*; *NAPOLEON III*.

CORPUS OF ENGINEERS. See *ENGINEERING, MILITARY*; *ARMY ORGANIZATION, UNITED STATES, Army*.

CORPULENCE. See *OBESITY*.

CORPUS CATHOLICORUM and **CORPUS EVANGELICORUM** (Lat., body of Catholics and body of Evangelicals). The names given in Germany after the Peace of Westphalia (q.v.) to the Roman Catholic and Protestant divisions of the empire respectively. The Elector of Mainz was at the head of the former as president. It generally held its meetings in a convent of that city in which the Diet happened to meet. The Elector of Saxony was at the head of the latter. When the Electoral House of Saxony became Roman Catholic, the control was given to the Privy Council, which was a Protestant body. Both were extinguished by the dissolution of the German Empire in 1806.

CORPUS CHRISTI (Lat., body of Christ). An important festival of the Roman Catholic church, in honor of the sacrament of the Eucharist. It was first celebrated in Liège in 1246 and decreed for the whole church in 1264 by Urban IV, partly in consequence of the vision of a Flemish nun named Juliana, and partly because the anniversary of the sacrament's institution fell at the most solemn and mournful time of the Christian year, when services of a festal character were impossible. It was assigned to the Thursday after Trinity Sunday, and this day is still observed in most parts of continental Europe by magnificent processions through streets decked with flowers and green boughs. In the United States and some other countries the solemnities are celebrated on the Sunday after Trinity. The office of Corpus Christi, composed by St. Thomas Aquinas, is one of the most beautiful in the breviary.

CORPUS CHRISTI. A city, port of entry, and the county seat of Nueces Co., Tex., 130 miles (direct) south by east of San Antonio, on Corpus Christi Bay, and on the National of Mexico, the San Antonio and Aransas Pass, and the St. Louis, Brownsville, and Mexico railroads, and on the line of the Texas and Gulf Steamship Company (Map: Texas, D 6). Corpus Christi is a popular health resort, has fine boating and bathing facilities, hotels, and boarding houses, and the vicinity abounds in ducks, geese, and other game. It contains a public library, sanitarium, and a fine county courthouse. The city is the centre of a market-gardening region, has a canning factory, and exports large quantities of fish and oysters. There is a good harbor, attracting considerable coasting trade. Corpus Christi adopted the commission form of government in 1909. The city owns its water works. Gen. Zachary Taylor encamped here during the Mexican War, and his intrenchments are still preserved. Pop., 1900, 4703; 1910, 8222.

CORPUS CHRISTI COLLEGE (Cambridge). In 1352 the two guilds of Corpus Christi and St. Mary in the town of Cambridge united to found a hall or college for educating clergy to fill the places of those carried away by the recent visitation of the black death. The master and two fellows of this new foundation served as chaplains of the guild and officiated also in St. Benet's Church, at which the members of the fellowship of Corpus Christi worshipped and which was appropriated to the college. The college was known as Benet College down to 1827, when the present and more official title was adopted. In the sixteenth century the patronage of Sir Nicholas Bacon, who was a member and a benefactor of the college, together with the mastership of Archbishop Parker, brought the foundation much profit and honor. The unrivaled collection of manuscripts, collected by the latter at the dissolution of the monasteries and bequeathed to the college, are among its chief treasures. Besides this and the Lewis collection of printed books, the college owns the most interesting collection of plate in the university. Christopher Marlowe and John Fletcher were members of Corpus Christi. The buildings are of much interest, including the earliest closed quadrangle in the university, standing almost unaltered since its erection in the fourteenth century. The college consists of a master, 11 fellows, and 22 scholars, besides undergraduates, who in 1913 numbered 103. Consult H. P. Stokes, *Corpus Christi* (London, 1898).

CORPUS CHRISTI COLLEGE (Oxford). One of the smaller colleges in the university. It was the first of the Renaissance foundations, and its establishment marks an epoch in the intellectual history of the university. It was founded in 1516 by Richard Foxe, Bishop of Winchester, and Lord Privy Seal, the principal Secretary of State and chief counselor and diplomat of Henry VII, partly at the suggestion and cost of Hugh Oldham, Bishop of Exeter, and founder of the Manchester Grammar School in 1515. In Corpus Christi College we find the first noteworthy attempt to depart from the older educational tradition of the university, in the establishment of an endowed chair of Greek, the first in Oxford, and in throwing open the professorial lectures to all members of the university. The honor of founding the

professorial system Foxe shares with Bishop Waynflete and Margaret of Richmond, whose executor he was. The statutes of his foundation contain the most stringent rules for life and work. These, with the liberal provisions for the study of Latin and Greek, and humanistic studies in general, called forth the high praise of Erasmus. Though his prediction of the future preëminence of the college in the university has not been fulfilled, Corpus Christi has always maintained an excellent reputation for scholarship. It has counted among its members John Keble, Thomas Arnold, "the judicious Hooker," his patron Bishop Jewell, Nicholas Udall, the author of the first English comedy, and, for a very brief period, Oglethorpe, the founder of Georgia, Chief Justice Coleridge, and Thomas Day, author of *Sandford and Merton*. The buildings of the college are among the most harmonious in Oxford, and in this, as in its size, character, and standing, it has been aptly reckoned among the three typical colleges of the university. Its statutes were revised in 1881, and the new provisions are not as yet fully carried out. It consists on its present foundation of a president, 14 fellows, of whom 3 are professorial fellows, 27 scholars, and 5 exhibitioners, besides undergraduates. In 1913 the latter numbered 89. (consult T. Fowler, *Corpus Christi* (London, 1898).)

CORPUSCULAR THEORY OF LIGHT. SEE LIGHT.

CORPUS DELICTI (Lat., body of the offense). In criminal law, the essential element of the alleged crime. If a person is charged with murder, the prosecution must prove the death, as by the finding and identification of the corpse, or by evidence of criminal violence adequate to produce death and to account for the disappearance of the body. In other words, the *corpus delicti* in such a case consists in the death of the person alleged to have been murdered and the criminal agency of the alleged murderer in producing that death. The same doctrine is applicable to other offences. If one is charged with larceny, the prosecution must prove that the crime of larceny has been actually committed. See CRIMINAL LAW, and consult the authorities there referred to.

CORPUS DOCTRINÆ (Lat., body of doctrine). A collection of writings intended to have authority in the Protestant churches of Germany. The chief of such collections was the *Corpus Philippicum* (Leipzig, 1560), containing the Apostolic, the Nicæan, and the Athanasian creeds, the Augsburg Confession, and Melancthon's *Loci Communes*. This and similar collections were superseded by the *Formula Concordiæ*. See CONCORD, BOOK OF.

CORPUS INSCRIPTIONUM LATINARUM (Lat., body of Latin inscriptions). A great collection of Latin inscriptions, geographically arranged in 15 volumes, published by the Royal Academy in Berlin. The first volume appeared in 1863, the last in 1891. This work is the most important authority in the study of Roman epigraphy. Consult Egbert, *Latin Inscriptions* (New York, 1896).

CORPUS JURIS (Lat., body of law). A comprehensive collection of the entire body of law of a given jurisdiction. The phrase has been specifically applied to two great compilations of law, both based on the jurisprudence of the Roman Empire, viz.:

1. The *Corpus Juris Civilis*, or body of the

civil law known, by way of eminence, as the *Corpus Juris*, is made up of the Code, the *Pandects*, or Digest, and the Institutes, compiled and promulgated by the authority of Justinian (528-534 A.D.), and the Novels (*Novellæ Constitutiones*), subsequently promulgated by him to correct errors and defects in the previous work. The first instance of the use of the expression *Corpus Juris Civilis* to describe the collection is found in the year 1583. As a whole, the work became the textbook of mediæval law, was the basis of instruction in the great law schools of the Middle Ages, and is the foundation of the scientific study of law in all the universities of continental Europe to-day. It has been truthfully said that, "with the exception of the Bible, no book was ever more widely studied by the Caucasian races." The best edition is that of Mommsen (who edited the Digest), Krüger (Institutes and Code), and Schæel (the Novels). It has been translated into German, but never as a whole into English, though the Institutes and some portions of the Digest have been made available for English readers. See CIVIL LAW; CODE; DIGEST; and consult Lee, *Historical Jurisprudence* (New York, 1900); Hadley, *Roman Law*.

2. *Corpus Juris Canonici*.—The corresponding body of the canon law of the Church of Rome had a slower growth. The first compilation to which the name was applied was the *Decretum* of Gratian, a learned professor of the canon law at the University of Bologna, published about 1150 A.D. This was a private, unofficial collection of synodical canons and papal decretals, made for use as a textbook in the law school, but it at once became a leading authority in the Church. Subsequent official collections—principally the *Libri Extra Decretum* of Pope Gregory IX, the *Liber Sextus* of Boniface VIII, and the compilation of Clement V, known as the "Clementine Decretals"—were embodied in the *Corpus* and became parts of it. Thus completed, the entire work has continued to be the standard of the canon law. The best editions are those of Bohmer (1747) and Richter (Leipzig, 1833, 1877-81). See CIVIL LAW; CANON LAW; and consult Lee, *Historical Jurisprudence* (New York, 1900).

CORRAL, kôr-râl', PONCIANO (c.1810-55). A Central American general, born in Costa Rica. He settled in Nicaragua early in his youth and became Minister of State in 1853. Subsequently he became identified with the Legitimist government and commanded the army which defeated William Walker (q.v.) at Managua (1855). Shortly after, the battle of La Virgen (Sept. 3, 1855) and the occupation of Granada, he made terms with Walker, who, however, afterward accused him of treasonable negotiations with leaders of the Legitimist party. After a brief court-martial Corral was shot, Nov. 8, 1855. There seem to be no grounds for Walker's accusation. See the life of Corral by Cortés.

CORREA DA SERRA, kôr-râ'á dâ sêr'râ, JOSÉ FRANCISCO (1750-1823). A Portuguese politician, scholar, and botanist, who was educated and took orders in Rome. With the assistance of the Duke of Lafões he founded the Portuguese Academy of Sciences in Lisbon and was made its perpetual secretary. He soon came into conflict with the Church, through the Inquisition, and fled to France, where he remained until the death of Pedro III, when

he again took up residence with Lafôes. Later he was obliged (because he aided a French Girondist) to flee to England, where he became secretary to the Portuguese embassy. In 1813 he came to New York, and in 1816-20 he was Portuguese Minister at Washington. In this latter year he was called back to Portugal to become a member of the financial council; and he was elected to a seat in the Cortes. He had high rank as a botanist, but his principal work is the exceedingly important and well-edited *Collecção de livros inéditos da historia portugueza* (4 vols., 1790-1816).

CORRECTION. See CRIMINOLOGY; PENALOGY; CHARITIES AND CORRECTION, THE NATIONAL CONFERENCE OF.

CORREGGIO, kôr-réd'jô. A city in the Province of Regio nell' Emilia, north Italy, situated on a canal connecting with the river Secchia, 27 miles east of Parma (Map: Italy, E 3). In the Piazza is a statue of the painter Antonio Allegri, known as Correggio (q.v.), who was born here in 1494. The town was once the capital of a principality belonging to the Duchy of Modena, and the princely castle still remains. Pop. (commune), 1881, 12,587; 1901, 14,437, 1911, 16,996.

CORREGGIO, properly ANTONIO ALLEGRI (c.1494-1534). A Lombard painter of the Renaissance, the greatest master of the Emilian school. His family name was Allegri, but he is usually called Correggio from his birthplace, a small town near Modena. We are less informed about his life than about that of any other of the chief Italian painters. According to the traditional accounts, as given by Vasari and the local historians, Correggio was humble and poor and passed his life in drudgery. He made an unhappy second marriage and died under distressing circumstances. But in contemporary documents it appears that his parents were tradespeople in comfortable circumstances, that he inherited property from his uncle, and was well paid for his work. For his frescoes in the cathedral of Parma alone he received 1000 gold ducats, besides materials. If he did not seek the courts of princes, where he might have gained high prices, it was because of his financial and moral independence.

Allegri's earliest years were passed in his native town. The lords of Correggio at that time maintained a number of artists and scientists at their court, and it was in this atmosphere that the young artist grew up. It is generally believed that he acquired the rudiments of painting from his uncle, Lorenzo Allegri, an unimportant local painter. It is also supposed that he was a pupil of Francesco Bianchi-Ferrari at Modena, but late research has pointed out that this is unlikely, because his earliest work bears no resemblance to Bianchi's. Moreover, the latter died in 1510, when Correggio was not over 16 years old. On the other hand, he may have learned anatomy and optics, in which he excelled, from Giambattista Lombardi, head of the academy at Correggio. He seems ere this to have attracted the attention of Lady Veronica Gamba, of Correggio, about whom the scientific and artistic culture of the little court centred. A probable tradition represents him as having gone with her to Mantua during the plague in 1511. Certain it is that his first works show the influence of Andrea Mantegna, particularly in his taste

for mythological subjects, his love for illusions of perspective, and in the beautiful nude figures of children and geni which abound in his works. It is also likely that he studied under Lorenzo Costa (q.v.), who was at that time head of the school of Mantua, and perhaps under Dosso Dossi (q.v.), who was for a time in Mantua. In Correggio's earlier works we also find traces of the influence of Leonardo da Vinci. This influence appears in the handling of light and the modeling of figures, and is particularly evident in two paintings now considered to be early works of Correggio, viz., a "Holy Family," in the Malaspina Gallery, Pavia, and a "Madonna," in the Museo Civico of Milan, both of which were formerly in possession of Milanese families. But it is not necessary to assume, as Ricci, the chief authority on Correggio, does, that he must have therefore studied in Milan. He may have become acquainted with Leonardo's work in some other way. A similar supposition is made by Thode, that because of resemblances of Correggio's frescoes in the convent of San Paolo, Parma (1518-19), with Raphael's in the Farnesiana and elsewhere in Rome, the former must therefore have visited Rome in 1517-18. Even granting this resemblance, which is not generally conceded, this conclusion seems unwarranted. An artist of Correggio's merit could not have visited Rome in 1517 without attracting some attention, and Vasari's relations with the artists in Rome were such that Vasari could not have been misinformed when he made the statement that Correggio never visited the Eternal City. Correggio united in himself the tendencies of all the Lombard schools—of Mantua, Milan, Bologna, and Ferrara—but it is unwarranted to infer that he studied in all of them.

In 1513 he returned to Correggio, and in 1514 he signed a contract to paint an altarpiece for the Franciscan church in that town. In 1518 he removed to Parma in response to an invitation to decorate with frescoes the chamber of the Abbess of San Paolo. In this city he passed the greater part of his remaining life and painted his greatest works; here also he founded his school. Besides numerous easel works and altarpieces, he was engaged from 1520 to 1524 in painting the frescoes of the cupola of San Giovanni in Parma, and from 1526 to 1530 he adorned the great cupola of the cathedral. In 1530, probably because he was displeased with the criticisms of this last great masterpiece, he returned to his native town and there passed the remainder of his life in peace and quietness, under the patronage of Veronica Gamba, occupying himself with mythological subjects. He died on March 5, 1534. He was married in 1520 to Girolama Merlini, a maiden of 17. She may have been the inspiration of three of his most charming Madonnas, which seem to have been suggested by domestic scenes. She bore him four children, of whom a son and a daughter survived. This son, Pomponio, was a painter, but, unlike his father, a very mediocre one. Girolama died in 1529.

Correggio's individuality is so marked, and his mastery of technique was developed at such an early age, that it is impossible to divide his work into distinct periods such as in the case of Raphael. We may, however, distinguish two periods separated by the year 1518,

when his great decorative works began. His earliest works are those executed before 1514, of which, according to the researches of Morelli, there are nine in all, to which modern critics add six more. A characteristic example is a charming "Madonna" in the Uffizi in Florence. She sits enthroned in the clouds, with two angels making music on either side. The general disposition of the picture resembles Mantegna's, but the execution and the delicate transitions from light to shadow, the soft, round figures, and the dreamy, magical tone are characteristics of Correggio. The two paintings mentioned above as showing the influence of Leonardo also belong to this period.

In his large altarpiece for the Franciscans of Correggio (1514), now in Dresden, the painter appears before us with a style already developed, showing the influence of Mantegna and the Emilian school. The Madonna sits on a high Renaissance throne, with two saints on either hand. The most interesting figure of the composition is St. Francis, whom she is blessing. He seems the incarnation of the happy and gentle spirit that softened and changed the Middle Age. A number of other works of a religious nature belong in the period of 1514-18, among which is the charming "Zingarella" of the Naples Gallery.

The frescoes in the convent of San Paolo (1518) form an epoch in Correggio's career, for they were his first monumental efforts, and with them he may be said to have begun the school of Parma. They reveal him as a master of mythological representation, the peer of Raphael himself. On the principal wall of the Abbess's chamber is the figure of Diana returning from the chase, in a car drawn by white stags. The ceiling is decorated with a trelliswork of vines, from which peer 16 little cupids, bearing attributes of the chase—the most bewitching figures imaginable. Lower on the walls are 16 lunettes filled with the mythological figures, like the Fates, the Graces, and Satyrs.

In the cupola of San Giovanni of Parma Correggio attempted a grander style of composition (1520-24). This was the first example of a cupola to be treated with frescoes, and Correggio had no precedents to follow. He treated the cupola as if it were the heavens, portraying Christ and the Apostles amid the clouds. In the centre was Christ in glory, a specimen of keenest foreshortening. The Twelve Apostles, rapt in deepest wonder, are seated upon the cloud below, and in the pendentives are the four Evangelists and four fathers of the Church in groups of two—all figures of the utmost nobility of conception. The decorations of the cupola of the cathedral of Parma (1526-30) are grander still and constitute his most ambitious effort. Their subject is the "Ascension of the Virgin." In the upper half of the cupola Christ goes forward to meet the Madonna, who is borne upward by a host of angels. In the lower part stand the Apostles gazing in rapt wonder upon the scene, and behind them are a large number of beautiful geni with candelabra and the like, as if preparing for a great celebration. The innumerable hosts of the angels seem to float beneath the Madonna, and the whole picture is animated with ecstatic joy. The color is beautiful and soft—the great fresco has well been termed an apotheosis of color.

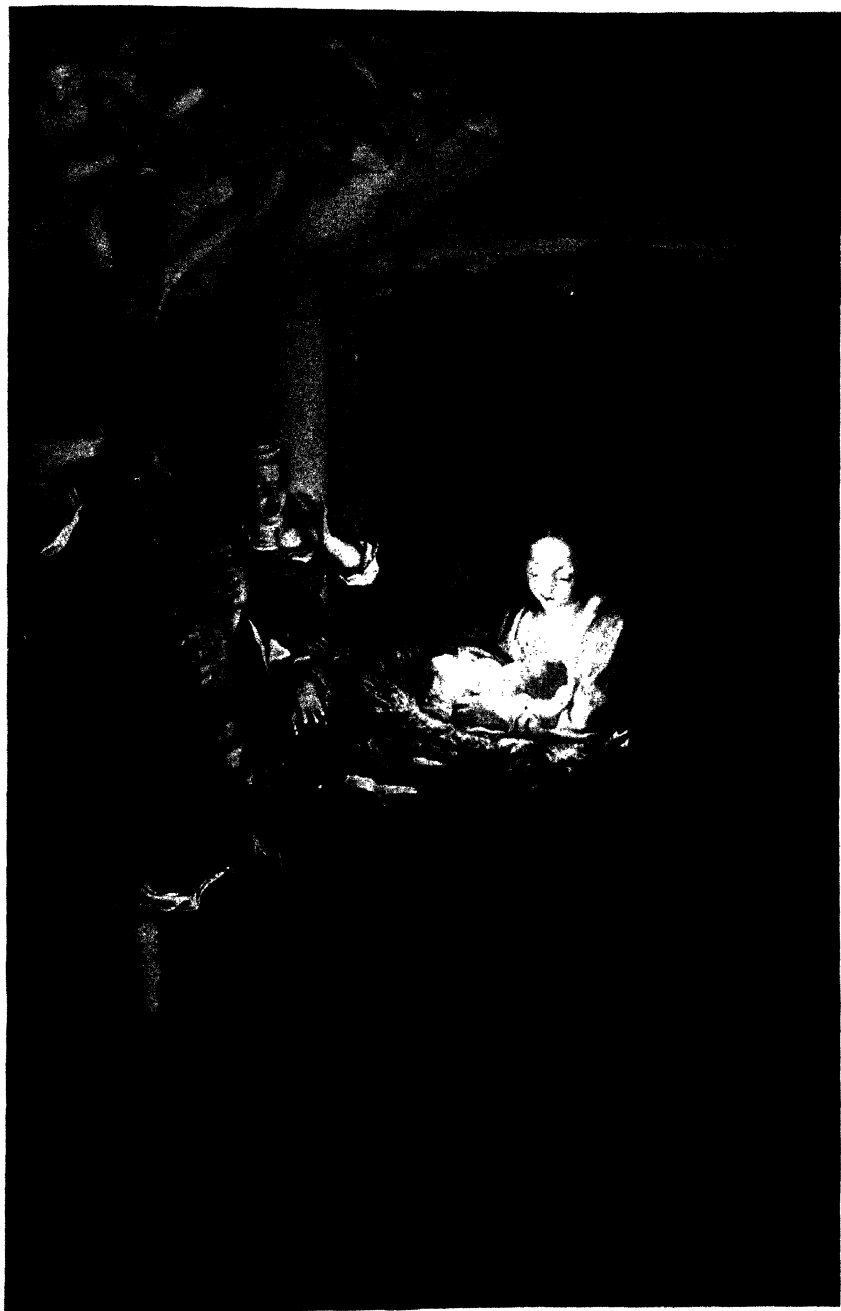
These three series of frescoes were his great-

est works. But in addition to these Correggio painted many other pictures during the period 1520-30. The famous "Marriage of St. Catherine," in the Louvre, was painted in 1522. It is impossible to conceive more beautiful and expressive heads than these, or hands and hair more perfectly painted. Correggio's works of this period may best be studied in the galleries of Parma and Dresden. Foremost among them is a series of five great altarpieces, the best of which are the so-called "Night" and "Day." The latter, which is in Parma, represents the Madonna and a very beautiful Magdalen, painted in the full light of the day, which is wonderfully diffused. The famous "Night," in Dresden (ordered in 1522, but not painted until 1529), is in reality a birth of Christ, in which the light issues from the new-born infant, lighting with wondrous radiance the Madonna, and the faces of the two women and the shepherds, which stand out in vivid contrast to the darkness above. Never were light and shade better handled than in these two pictures. On the other hand, Morelli has conclusively shown that the well-known "Reading Magdalen" of the Dresden Gallery is no Correggio at all, but probably a copy by Adrian van der Werff, or, as later critics assume, by an Italian painter.

The last period of Correggio's life was chiefly spent in painting mythological pictures. Earthly love was the theme he sought to portray, and none could portray it better than he. His work is sensuous, but not sensual. His "Io" and his "Leda" are as innocent and charming as the Greeks themselves conceived them. Perhaps the finest of these productions are the "Jupiter and Antiope" in the Louvre, and the "Danaë" of the Borghese Gallery, Rome.

Correggio's canvases are peculiarly impressive because of his wonderful treatment of light and shade, of which he was the greatest master among the Italians. He generally represents the chief figures in high light, which is vividly contrasted with the surrounding gloom. His colors are soft and harmoniously blended, and the values are accurately given: his carnation is perfect. His figures are faultlessly modeled, and with him a picture is no longer a flat surface. Another chief characteristic of his work is the dramatic action of his figures, which is sometimes so pronounced that their movements seem exaggerated, as was also the case with those of Michelangelo. But in the case of Correggio the effect is softened by the mystic light which envelops the picture. His drawing is said to be inaccurate, but such cases are certainly exceptional. Correggio drew with his brush, so to speak, and the general effect of the pictures is most charming. In the strength of his individuality, in the subjectivity of his pictures, he is second only to Michelangelo. His place in the history of art is among the five great Italian painters, with Michelangelo, Leonardo, Raphael, and Titian. The school of Parma which he founded was not of great importance, Parmigiano (q.v.) being the only pupil of note. But Correggio exercised great influence upon the Carracci in the following century and was the great model of the Baroque painters.

Bibliography. The researches of Morelli, epoch making for Correggio, are still an authority. Of the earlier monographs the most important was the comprehensive work by Landon (Paris, 1803-20). By far the most important work is that of Ricci (Eng. trans., Lon-



CORREGGIO

"HOLY NIGHT," FROM THE PAINTING IN THE ROYAL MUSEUM, DRESDEN

don, 1896). Others are by J. Meyer (Eng. trans., ib., 1876); Heaton (ib., 1882); Thode, "Correggio" in *Künstler-Monographien* (Bielefeld, 1898); Sturge Moore (London, 1896); and Gronau (Stuttgart and Leipzig, 1907). See also Berenson, *Studies in Italian Art* (London, 1901).

CORREGIDOR, kôr-rêj'fî-dôr, *Sp. pron.* kôr-râ'hê-dôr' (Sp. *corregidor*, Portug. *corregedor*, corrector). The Spanish and Portuguese title of the principal magistrate of a town. The term is sometimes applied also to certain provincial magistrates in Spain.

CORREGIDOR ISLAND, Philippine Islands, lies in the entrance to Manila Bay (Map: Luzon, D 9), and divides the entrance from the China Sea into two channels—the Boca Chica to the north, 3 miles wide, parting the island from Batañ on the mainland of Luzon; the Boca Grande, $6\frac{1}{2}$ miles wide, from Cavite. The island is 4 miles in its greatest dimension, from east to west; its area is 2 square miles, and 5 dependent islands cover 2 square miles. The greatest elevation is 639 feet, near the western end. Three springs afford an abundant supply of water conveniently placed for shipping. There are four lighthouses. San José is the only town; its fixed population is about 500. The dependent islands are El Fraile, Horadada, La Monja, Pulo Caballo, and Santa Amalia. The island is the first post of the inner line of defense of Luzon and is heavily fortified. In the storming of Manila Bay, May 1, 1898, Admiral Dewey steamed safely past the island, which was supposed to have been strongly fortified by the Spanish, containing the base operations for the submarine defense of the bay.

CORRELATION (ML. *correlatio*, from Lat. *com*, together + *relatus*, p.p. of *referre*, to refer, from *re*, back + *ferre*, to bear). The reciprocal influence of plant organs. The removal or unusual development of one organ may affect the mode of development of others. For example, if the terminal shoot of a pine be cut away, one or more neighboring laterals will grow erect and in a measure take its place, and branches will be formed on all sides of the new leader. Otherwise it would have grown almost horizontal and become branched only in a horizontal plane. See GROWTH.

CORRENTI, kôr-rên'tê, CESARE (1815-88). An Italian statesman and revolutionist, born in Milan and educated in that city and in Pavia. He originated several important statistical works and the almanac *Nipote del Vestaverte*. As one of the strongest opponents of Austrian domination in Italy, he contributed materially towards the establishment of unification. In the work entitled *L'Austria e la Lombardia* (1845) he set the popular sentiment against Austria, and during the insurrection at Milan (March 18-22, 1848) was appointed Councillor of War and Secretary General of the provisional government, of which he eventually became in some respects the central figure. In 1860 he was appointed Councillor of State; in 1866 he was intrusted with the organization of the Venetian Provinces, and subsequently he served as Minister of Education in the Ricasoli (1866) and Lanza (1869-72) cabinets. Correnti had exceptional oratorical power and marked literary ability. The publications with which he became identified, either as editor or as collaborator, have advanced statistical science in Italy.

CORRESPONDENCE (Lat. *com*, together

+ *respondere*, to answer, from *re*, back + *spondere*, to promise). A term used in mathematics to express certain reciprocal relations. If each individual of one group of objects bears a certain relation to a definite number of individuals of another group, and a definite number of individuals of the first group bears the same relation to each individual of the second group, there is said to be a correspondence between the objects of the groups. If 1 of the first group corresponds to B of the second, and 1 of the second group corresponds to A of the first, the relation is called an A to B correspondence. If $A = B = 1$, it is called a 1 to 1 ($= 1$) correspondence; e.g., two numbers are said to be equal when there exists a 1 to 1 correspondence between their units. In geometry the simplest cases of 1 to 1 correspondence, or "conformal representation," are furnished by two planes superposed one upon the other. Here to every point of the first figure there corresponds one and only one point of the second figure, and to every point of the second figure there corresponds one and only one point of the first. The simplest case of Chasles's (q.v.) correspondence formula may be stated thus: If two ranges of points R_1 and R_2 lie upon a straight line so that to every point x of R_1 there correspond in general α points y of R_2 , and again to every point y of R_2 there always correspond β points x of R_1 , the configuration formed from R_1 and R_2 has $(\alpha + \beta)$ coincidences, or there are $(\alpha + \beta)$ times in which a point x corresponds with a point x . From these linear transformations Poncelet, Plücker, Magnus, Steiner, passed to the quadratic, where they first investigated 1 to 1 correspondence between two separate planes. The "Steiner projection" (1832) employed two planes E_1 and E_2 together with two straight lines g_1 and g_2 not coplanar. If we draw through a point P_1 or P_2 of E_1 or E_2 the straight line α , or α_2 , which cuts g_1 as well as g_2 , and determines the intersection X_2 or X_1 , with Σ_1 or Σ_2 , then are P_1 and X_2 and P_2 and X_1 corresponding points. In this manner to every straight line of the one plane corresponds a conic section in the other. In 1847 Plücker had determined a point upon the hyperboloid of one sheet, like fixing a point in the plane, by the segments cut off by two fixed generators upon the two generators passing through the point. This was an example of a uniform representation of a surface of the second order upon the plane. Correspondence relative to surfaces has been studied by Chasles, Clebsch, Cremona, Cayley, and others. In space of three dimensions, only a beginning has been made in the development of this theory. Consult: Schubert, *Kalkül der abzählenden Geometrie* (Leipzig, 1879); Klein, *Vergleichende Betrachtungen über neuere geometrische Forschungen* (Erlangen, 1872); Möbius, *Der barycentrische Calcul* (Leipzig, 1827); Holzmüller, *Theorie der isogonalen Verwandtschaften* (ib., 1882); Riemann, *Ueber die Hypothesen, die der Geometrie zu Grunde liegen* (ib., 1854); Pasch, *Vorlesungen über neuere Geometrie* (ib., 1882).

CORRESPONDENCE SCHOOLS. Institutions for the provision of instruction in all branches of education by mail to those who are unable to avail themselves of the opportunities of attending ordinary schools and colleges. The system aims to provide plans of work, outlines, and exercises by correspondence. The method probably originated with the University Exten-

sion movement in England, there organized in 1868 and introduced in America in 1873. In 1883 a Correspondence University was established in Ithaca, N. Y. The system received its greatest extension through the work of Pres. William R. Harper in connection with the Chautauqua Institution, which abandoned this function when it was taken over by some of the universities, notably Chicago and Wisconsin, and many private institutions established for this purpose, notably the International Correspondence Schools at Scranton, Pa. Almost every branch of knowledge, both for self-improvement generally or in connection with the trades or vocations, can be studied in this way.

CORRESPONDING STATES, THEORY OF. See CRITICAL POINT.

CORREZE, kô'rêz'. A south central department of France (q.v.), formerly part of the Province of Limousin, taking its name from an affluent of the Vézère, the Corrèze, which traverses the department from northeast to southwest (Map: France, S., F 3). Area, 2273 square miles; pop., 1896, 310,514; 1901, 318,422; 1906, 317,430, 1911, 309,646. The surface of the department is mountainous, especially in the north and east, where it is broken in upon by offsets from the Auvergne Mountains, which range from 2500 to 3320 feet (Mont Besson) above the sea. It produces wheat, oats, barley, rye, maize, and potatoes, though not in quantities sufficient for its own needs. Grazing is also carried on. Coal, iron, lead, antimony, and copper are found in considerable quantities. Flour, beer, oil, lumber, dyestuffs, hats, woollens, shoes, chairs, paper, and leather are manufactured. Capital, Tulle.

COR'RIB, LOUGH. A lake with an area of 68 square miles, which divides Galway, in the western part of Ireland, into an eastern and a western section (Map: Ireland, B 3). From its southern end, 4 miles north of Galway, it discharges its surplus waters by Galway River into Galway Bay. It receives the waters of the Clare and smaller rivers, and those of Lough Mask, subterraneously through the Pigeon Hole and other caves at its northern end. On its sides are metamorphic rock, Carboniferous limestone, and marble. Near it are many monumental heaps and megalithic circles. It contains 300 islets, and to the west are mountains 3000 feet high.

CORRIENTES, kôr-ryân'tas. A city of Argentina and capital of the province of that name, situated on the Paraná, just below the mouth of the Paraguay and not far below the mouth of the Bermejo (Map: Argentina, F 9). It has several plazas, hospitals for men and women, a poorhouse, a national college, a normal school, a theatre, and a library. The natural-history museum was at one time managed by the naturalist Bonpland. The city is the centre of a fertile district and has considerable trade in lumber and oranges. Its chief industry is shipbuilding, but there are also meat-curing establishments and a foundry. Pop., 1909, 23,904. Corrientes was founded in 1588. It occupied a place of considerable prominence in the revolutionary movements during the latter half of the nineteenth century.

COR'RIGAN, MICHAEL AUGUSTINE (1839-1902). An American Roman Catholic prelate, born at Newark, N. J. He graduated in 1859 at Mount St. Mary's College (Emmitsburg, Md.), pursued a theological course at the American

College of Rome as one of the 12 students with whom that institution was begun, was ordained priest in 1863, and from 1864 to 1868 was professor of dogmatic theology and sacred Scriptures in the Diocesan Seminary of Seton Hall College (South Orange, N. J.). From 1868 to 1873 he was president of the college and in 1873 was appointed Bishop of Newark. During his administration of the diocese he greatly increased the number of churches, introduced religious communities, and founded charitable institutions. In 1880 he became coadjutor (with right of succession and the title of Archbishop of Petra) to Cardinal McCloskey, Archbishop of New York, and from that time directed the larger part of the work of the archdiocese. He entered into the office of Archbishop of New York in 1885 and received the pallium in 1886. His administration was marked by the prolonged controversy between Dr. Edward McGlynn (q.v.) and the Roman Catholic church. He effectively developed the archdiocese, which at the time of his death was one of the largest and most important in the world. Although personally retiring and unobtrusive, he became known, through his many activities, as one of the most prominent Roman Catholics in the United States. He was a scholar of high attainments. Consult J. A. Mooney, *Michael Augustine Corrigan: A Memorial* (New York, 1902).

CORROBORREE (Australian). A sort of ceremonial dance, of a more or less public character, in vogue among the Australian aborigines. The corroboree is held at night, and various types of it occur all over the country, or are borrowed from tribe to tribe, some of a warlike, some of an historical, others of a lascivious character. Generally the men do the dancing, and the women furnish the accompanying music. The songs that go with the corroboree give scope for individual and tribal invention. The corroboree combines in itself the elements of the public celebrations among civilized races and the opera of to-day. It is the nearest approach to a national institution among these primitive people. The corroboree serves also as a peace ratification and as a means of intercommunication, etc. Consult Roth, *Ethnological Studies among the Northwest-Central Queensland Aborigines* (1897).

CORRODI, kôr-rô'dé, WILHELM AUGUST (1826-85). A Swiss poet and draftsman, born at Zurich. He studied theology, but became a painter and from 1862 to 1881 taught drawing in Winterthur. In his poems, many of which are written in the popular dialect, he mirrors the life of his native canton, celebrating its customs and reviving many of its best traditions. His works, which are generally distinguished by a fine sense of humor, include: *Dur und Moll: Aus Natur und Leben* (1855); *Ein Buch ohne Titel, aber für Kinder von sieben bis siebenmal sieben Jahren* (1855); *Waldleben*, a lyrical novel (1857). The works of Corrodi written in the dialect of Zurich include: *De Herr Professor*, an idyl (1858); *Der Herr Vikar* (1858); *De Herr Dokter*, an idyl (1860, dramatized by the author in 1872); *Wie d'Warret curkt*, a comedy (1887); and a translation of the works of Robert Burns into Swiss German (1872). Corrodi illustrated several of his own books.

CORROSIVE SUBLIMATE. See MERCURIC CHLORIDE.

CORROZOZO NUTS. See IVORY, VEGETABLE.

CORRUGATED IRON. A name given to sheet iron or steel in which grooves and ridges have been produced by passing the sheet between rollers, the surfaces of which are formed into rounded grooves and ridges, the ridges of one roller filling the grooves of the other. By corrugation the stiffness of the metal sheet is greatly increased, and it is adapted for use in many places where a metal covering of lightness and strength is required, such as roofs, awnings, and the side walls of sheds and factory buildings. Corrugated iron is frequently galvanized with a thin layer of zinc to make it less liable to corrode or rust; a small percentage of copper is also alloyed with iron before corrugating for the same purpose. It is manufactured in a variety of thicknesses and with corrugations varying in size.

CORRUPTION OF BLOOD. The blasting of inheritance: one of the consequences of an attainer for treason or felony under the old common law, whereby the offender was cut off, or outlawed, from all of his blood relationships and so rendered incapable of inheriting lands or of transmitting them by descent to his natural heirs, lineal or collateral. The effect of the corruption of blood being the extinction of the line of heirs of the person attainted, his lands at once, upon his execution, became subject to the law of escheat and became vested in his superior lord. In cases of treason the principle of forfeiture gave the lands to the king absolutely, and in cases of ordinary felony they went to the crown for a year and a day before escheating to the lord. This barbarous penalty survived in England, nominally at least, until 1870, when it was abolished by the Forfeiture Act. It has never been tolerated in the United States and is expressly forbidden by the Constitution, which declares (Art. III, Sec. 3, n. 2) that "no attainer of treason shall work corruption of blood, or forfeiture, except during the life of the person attainted." The constitutions of the several States contain similar provisions. See ATTAINER; FORFEITURE; TREASON.

CORRUPT PRACTICES. Dishonest methods employed with the intent to influence the results of public elections. The practices to which the expression refers are the use of bribery, treating, undue influence, personation of voters, making false election returns, and knowingly making a false declaration as to election expenses. Of these, bribery, personation, and making false returns are common-law offenses and render the offender liable to indictment, and so, it has been held in England, is the giving of entertainment to voters with the corrupt intention of influencing an election. Any of the acts enumerated above, excepting that of making a false declaration as to election expenses (which is purely a statutory offense), whether criminally punishable or not, will at common law vitiate the result produced by them, and, if the corruption be general, will have the effect of nullifying the election itself.

The prevalence of bribery and other corrupt practices at parliamentary elections in England, and at all partisan contests in the United States, has in recent years led to the enactment of statutes in both countries to check the evil. The English Parliament led the way in these reforms by enacting the Corrupt Practices Prevention Act in 1854, which was aimed particularly at the practice of electoral bribery. This was followed in 1868 by the Parliamentary Elections Act, and in 1883 by the Corrupt and Illegal Practices Pre-

vention Act. Altogether these statutes constitute a most comprehensive and well-devised body of legislation, and they have proved themselves to be admirably adapted to the end in view. They define with great particularity the acts which shall constitute the prohibited offenses, and prescribe the severe penalties of disfranchisement and the avoiding of the elections for their commission. The personation of voters is made a felony, and bribery and the other practices enumerated are declared to be misdemeanors. Many of the best provisions of these statutes have been incorporated in the election laws of American States. For the history and scope of these laws, see ELECTION; ELECTORAL REFORM. The English law may be further studied in Rogers, *Elections* (17th ed., London, 1895); Mattinson and Macaskie, *Law Relating to Corrupt and Illegal Practices* (3d ed., London, 1892).

CORRY. A city in Erie Co., Pa., 37 miles by rail southeast of Erie, on the Erie and the Pennsylvania railroads (Map: Pennsylvania, B 2). The State Fish Hatchery and the high-school buildings are prominent features. Corry has steelworks, machine shops, flour and feed mills, brickworks, and manufactures of tram locomotives, stationary, gas, and steam engines, leather goods, corsets, furniture, radiators, shovels, wrenches, brushes, toys, etc. It has also extensive dairying interests. There are three mineral springs of value in the vicinity. Settled in 1860, Corry enjoyed a rapid growth, due to the existence of petroleum in the vicinity. The city adopted the commission form of government in December, 1913. Pop., 1890, 5677; 1900, 5369; 1910, 5991.

CORRY (from Ofr. *coire*, ravine, Swiss *Kahre*). A name applied to the recesses in a mountain slope beneath a sharp peak with serrate spurs, characteristic of the high Alps. These are referred by E. Richter to glacial erosion under specific conditions, although no glaciers occur in them at the present time. See CIRQUE.

COR/SAC (native name), or ADIVE. A small fox (*Vulpes corsac*) of the deserts of Central Asia, its range extending through the open country from the Ural Mountains and Caspian Sea to Mongolia. It is pale, reddish yellow in hue, white on the ventral surface, and with the tip of the long bushy tail black. In the sixteenth century it was fashionable as a ladies' pet in France. It digs holes for itself or seizes upon marmot burrows, preys, chiefly at night, on young marmots, small rodents, insects, etc., and resembles the American kit fox (q.v.). The Russian traveler Przevalsky reports it as abundant in Tibet, where it is called *karsa* by the Mongols, and is both trapped and run down by dogs. During the breeding season, in February, the high deserts resound with its owl-like cries, night and morning. See FOX; and Plate of FOXES AND JACKALS.

CORSAIR (Fr. *corsaire*, from Prov. *corsari*, Sp., Portug. *corsario*, It. *corsaro*, corsair, from *corsa*, Sp., Portug. *corso*, It. *corsa*, course, from Lat. *cursor*, course, from *currere*, to run). A pirate or freebooter, or the vessel used by one. The term was used with special reference to the marauding vessels of the Barbary Powers.

CORSAIR. One of the smallest and most brilliantly orange-red rockfish (*Sebasticthys rosaceus*) of the California coast. See ROCK-FISH.

CORSAIR, THE. A narrative poem by Byron (1814). The romantic adventures of the lofty-spirited pirate who is its hero are supposed to be continued in *Lara*.

CORSE, JOHN MURRAY (1835-93). An American soldier, born in Pittsburgh, Pa. In his eighteenth year he entered at West Point, which he left to take up the study of law. He enlisted in the Union army at the outbreak of the Civil War, commanded a division at Memphis, and became brigadier general in 1863. He distinguished himself in the Chattanooga campaign, was in command of a division in General Sherman's "March to the Sea," and was brevetted major general for his heroism at Altoona Pass (q.v.). While defending this place Sherman sent him a sun telegram saying, "Hold the fort, for I am coming," an exhortation taken by Ira D. Sankey as the topic of a hymn. He was afterward collector of revenue in Chicago and postmaster of Boston.

COR/SET (Fr., dim. of *corps*, OF. *cors*, body, from Lat. *corpus*, body). An article appertaining to the costume of women, which was introduced into France about the time of the Revolution, when the French ladies adopted the Greek dress. Previously they had been worn by Germans, by whom they were invented. Bandages resembling corsets were used in Rome during the early ages, but only as a support, until a slender waist was considered a mark of beauty, when they were made to compress the form. Modern corsets, which vary with the dictates of fashion as regards shape, design, and material, are usually made of two thicknesses of white jean, silk, or other material, quilted together so as to form vertical cases, in which steels or whalebones are inserted, or they may be wholly, or in part, of some elastic or webbing material. Usually they are in two pieces, closed in front with steel or whalebone plates, which rest on the breastbone vertically, and laced at the back as tightly as the wearer may desire. With the more general participation of women in various athletic sports there have been many modifications in corsets aimed to secure freedom of movement, while the change from the hourglass figure, at one time fashionable, to classical or Empire costumes led to important innovations. As these styles demanded straight lines in preference to curves, corsets were modified accordingly, and at the same time a tendency developed to do away with these one-time essentials to dress and to emphasize the more natural figure. Whatever the changes called for by designers of fashions, the corset maker was always ready with new contrivances or substitutes to secure the desired figure. The manufacture of corsets in the United States more than doubled in value in the decade 1899-1909, and in 1909 the United States Census of Manufactures reported 138 establishments (a decrease from 205 in 1890, but increase in capital and product), with a capital of \$18,033,000, devoted to the manufacture of corsets. The value of the product in 1909 was \$33,257,000. As showing the tendency towards concentration and consolidation in this industry, it may be said that while the number of establishments in 1909 was no greater than in 1899 (138 at each census) the amount of capital invested increased from \$7,290,000 in 1899 to \$18,033,000 in 1909 and the value of the output from \$14,451,000 to \$33,257,000.

COR/SICA (Gk. *Kúpros*, *Kýrnos*, *Kopéis*, *Kor-sis*, Lat. *Corsica*, Fr. *Corse*). An island belong-

ing to France (the fourth in size of the islands in the Mediterranean), situated between lat. 41° 21' and 43° N. and long. 8° 32' and 9° 31' E. (Map: France, S, L 7). It is separated by the Strait of Bonifacio from Sardinia, on the south, and occupies an area of nearly 3368 square miles. In the northeast is a long, narrow peninsula, pointing in the direction of Genoa and terminating in Cape Corso. In its physical formation Corsica undoubtedly belongs more to Italy than to France. Its surface is traversed by numerous mountain ranges of rugged appearance and covered with beautiful forests. The principal chain runs from north to south, sending off numerous offshoots in every direction. The highest summits of the island are Monte Cinto, 8881 feet, Monte Rotondo, 8612 feet; Monte Padro, 7851 feet; and Monte d'Oro, 7845 feet high. The coasts are precipitous on the west, while on the east they are low and in some parts even swampy. The chief geological formation is granite, occasionally interspersed with porphyry and serpentine. There are a number of short and swift streams on the island, the principal of which are the Golo, Tavignano, and Taravo. The climate is generally healthful and the temperature moderate, the average for the summer being about 75° F. The lower parts of the island are occasionally visited by malaria, but the mountain regions are very salubrious. The vegetation of the island is rich, and the fine forests of chestnut, pine, and beech for which Corsica was famous in ancient times are still found on the mountain slopes. The flora of the valleys does not differ materially from that of Italy. There is an abundance of olives, oranges, citrons, vines, and other Mediterranean plants. The inhabitants, numbering about 300,000, are not enterprising, and, because the island is somewhat apart from the lines of regular traffic and intercourse with other peoples is wanting, they have retained many of their primitive customs.

The soil is very fertile, but agriculture is in a low state, less than half the total area being cultivated. There is scarcity of both labor and capital. The chief products are wheat, barley, rye, corn, wine, fruits, and chestnuts, the latter being used extensively for food. The agricultural work is done in part by laborers who come over from Tuscany. The number of cattle and horses is small, but sheep and goats are numerous. The silkworm is cultivated. There are also good fisheries of tunny and pilchard. Among the minerals mined are iron, lead, copper, and antimony, and there are quarries of granite, marble, and alabaster. The chief imports are foodstuffs, building materials, and metal ware. The exports consist mostly of wine, olive oil, fruits, and chestnuts. Corsica forms a department of France, and is divided into the five *arrondissements* of Ajaccio, Bastia, Calvi, Corte, and Sartène. The population in 1901 was 295,589; in 1906, 291,160, in 1911, 288,820, or 85.8 per square mile. The Corsicans are of mixed origin, independent in spirit, passionate and revengeful. (See *VENDETTE*.) They are simple and sober, but scorn work and pay little attention to the development of the natural resources of their island. The vernacular is a corrupt Italian. The capital is Ajaccio, with a communal population of 19,227 in 1911; Bastia had 29,412 inhabitants. There are no other large towns: Corte had in 1911 5211 inhabitants, and Sartène 4746.

Corsica is supposed to have been originally in-

habited by Ligurians. It was settled in succession by the Etruscans, the Phœnicians, and the Phœceans, and finally came into the possession of the Carthaginians in the fifth century B.C. Wrested by the Romans from the Carthaginians in the second half of the third century B.C., the island remained for seven centuries under the sway of Rome, until, after repeated attacks by the Vandals, it finally fell into their hands in 469. After the conquest of the Vandals by Belisarius in 534, Corsica was occupied successively by the Byzantine Empire, the Goths, Franks, and the Saracens. Towards the end of the eleventh century it came into the possession of the Pisans, by whom it was ceded in 1347 to the Genoese. The rule of the latter was marked by continuous revolts on the island, and the ruling city found itself compelled on several occasions to ask assistance from Austria and France. In 1736 a German adventurer, Baron Theodor von Neuhof, became King of Corsica, but soon was obliged to leave the island, and was never able to return. The uprisings under the leadership of Paoli during the second half of the eighteenth century were of the most serious nature. In 1768 Genoa made Corsica over to France. Paoli made an attempt to resist the French rule, but the dispatch of French troops to the island compelled him to seek safety in England. He returned in 1790, and in 1793 headed a successful rising, in which the British lent assistance to the patriots. In the following year Corsica came under the protection of Great Britain, from which it obtained a constitutional form of government. Two years later the British were forced by the French to evacuate the island, which has ever since remained in the possession of France. Corsica is noted as the birthplace of Napoleon. Consult: Girolami-Cortona, *Géographie générale de la Corse* (Ajaccio, 1893); Vuillier, *The Forgotten Isles* (New York, 1896); Caird, *The History of Corsica* (London, 1899).

CORSICANA, kôr-sê-kânâ. A city and the county seat of Navarro Co., Tex., 62 miles, by rail, south-southeast of Dallas, on the Houston and Texas Central, the St. Louis Southwestern, and the Trinity and Brazos Valley railroads (Map: Texas, D 3). It is the seat of the State Orphan Asylum and has an Odd Fellows' widows' and orphans' home, a Carnegie library, sanitariums, a fine courthouse, Federal and high-school buildings, a natatorium, and an Elks Home. Corsicana is a progressive manufacturing centre, having among its industries large cotton mills, gins, and compresses, sheet-metal works, broom, harness, candy, overall, and soda-water factories, cottonseed-oil mills, brickyards, flour mills, a grain elevator, foundry and machine shops, planing mills, etc. It is also the seat of an extensive oil industry, there being in its vicinity a number of wells, oil machinery factories, and two large refineries. The sewage system is owned by the city. Pop., 1910, 9749.

COR'SICAN BROTHERS, THE. A romantic drama adapted by Boucicault from a French play, *Les frères corses*.

CORSINI, kôr-sê-nê. A celebrated Florentine family, which from the thirteenth century was prominent in the history of Italy. The most famous was ANDREA (1302-73), Bishop of Fiesole, who was canonized in 1629. He was for 40 years a monk in Florence and then was made Bishop of Fiesole, and later legate to Bologna. That town was in the midst of a civil

war, but the eloquence of Corsini was successful in subduing it. Austere in his life and ambitious only for his church, he was a type of the mediæval bishop. LORENZO became Pope Clement XII in 1730. He restored the Corsini Palace in Rome, now containing the interesting Corsini Gallery.

CORS'NED (AS. *corsnæd*, from *coren*, p.p. of *cōsan*, Goth. *kuusan*, OHG. *kuusan*, Ger. *kiesen*, to choose + *snæd*, bit, from *snipan*, Goth. *sneipan*, OHG. *snidan*, Ger. *schnneiden*, to cut). A form of ordeal in early English law, which consisted in administering to the accused a morsel of barley bread, about an ounce in weight, which had previously been endowed by excretion with the magical power of exposing his guilt or innocence. If the accused was innocent, the bread was readily swallowed, if guilty, it struck in his throat and killed him. It was in this way (the chroniclers tell us) that Godwin, Earl of Kent, met his fate in the reign of Edward the Confessor when accused of the death of the King's brother. Compare the similar ordeal of the "water of jealousy," which, according to the Mosaic law, was administered among the Jews to a woman charged with adultery (Num. v.). Consult Blackstone, *Commentaries on the Laws of England*, bk. iv, p. 345. See ORDEAL.

COR'SO (It., course). A word used to express not only the racing of riderless horses, but also the slow driving in procession of handsome equipages through the principal streets of a town, such as almost always takes place in Italy on festive occasions. This custom has given the name "Corso" to the principal streets in almost all the larger towns of Italy. The best known of these is the Corso in Rome.

COR'SON, HIRAM (1828-1911). An American scholar, born at Germantown, Pa. He held positions in the Library of Congress and the Library of the Smithsonian Institution from 1849 to 1856, and taught in Girard College, Philadelphia (1865-66), and St. John's College, Annapolis (1866-70), and was professor of the English language and literature at Cornell University in 1870-1903. In 1906 he became a pensioner under the Carnegie fund. His publications include: *Handbook of Anglo-Saxon and Early English* (1871); *Introduction to the Study of Browning* (1886); *Introduction to Shakespeare* (1889); *Primer of English Verse* (1892); *The Aims of Literary Study* (1895); *Selections from the Canterbury Tales* (1896); *The Voice and Spiritual Education* (1896); *Introduction to the Prose and Poetical Works of John Milton* (1899). His Shakespearean textual criticism is of the highest value, and his interpretation of poets, especially of Browning, is luminous and sympathetic.

CORSON, JULIET (1842-97). An American educator and author, born in Boston. She was secretary of the New York Free Training School for Women in 1872-73 and devoted herself to study and experiments on healthful and economical cookery and dietetics. In 1876 she established the New York School of Cookery. She wrote several popular books, among them *Fifteen-Cent Dinners for Workingmen's Families* (1877); *Dietary for Schools* (1878), prepared at the request of the United States Commissioner of Education; *Cooking Manual* (1878); *Local American Cookery* (1885); *Living on Five Hundred a Year* (1886).

CORS'SEN, WILHELM (1820-75). A noted German philologist, who devoted himself espe-

cially to the ancient Italic languages and dialects. He was born in Bremen, Jan. 20, 1820, studied philology in Berlin (1840-44), and became professor of classical philology at Schulpforta in 1846. On account of ill health he retired in 1866 and dedicated the remaining years of his life to research at Berlin. He died at Lichterfelde, near Berlin. His most important work, *Ueber Aussprache, Vokalismus und Betonung der lateinischen Sprache*, was published in 2 vols. in Leipzig (1858-59), receiving the prize offered by the Royal Prussian Academy of Sciences for the best work on that subject. A second edition appeared in 1868-70. It was followed and completed by *Kritische Beiträge zur lateinische Formenlehre* (1863) and *Kritische Nachträge* (1866). Corssen afterward visited Italy and then set himself to prove that the Etruscans were an Italic people, allied closely to the Latins, in support of which theory he published a monumental work, *Ueber die Sprache der Etrusker* (2 vols., Leipzig, 1874-75). His arguments met at once violent and universal opposition (see especially Wilhelm Deecke, *Corssen und die Sprache der Etrusker, eine Kritik*, Stuttgart, 1875) and have never found support.

CORSTORPHINE, GEORGE STEUART (1868-). A British geologist, born in Edinburgh. He was educated at the universities of Edinburgh and Munich, in 1895 became professor of geology and mineralogy at the South African College and keeper of the geological department of the South African Museum, in 1896 director of the Geological Survey of Cape Colony, and in 1902 consulting geologist of the Consolidated Gold Fields of South Africa, Ltd. From 1908 to 1912 he was in private practice, after 1913 he served as principal of the South African School of Mines and Technology. Besides his annual reports of the Geological Survey of South Africa (1896-1901), and papers in the *Transactions of the Geological Society of South Africa* (1903-04), he is coauthor with F. H. Hatch of *The Geology of South Africa* (1905).

CORT, KÖRT, CORNELIS (c.1533-78). An eminent Dutch engraver and etcher. He was born in Hoorn, Holland, but removed to Antwerp, where he was first instructed by Hieronymus Cock, for whom he executed plates which were published with the signature of his master, as well as original landscapes. In 1566 he visited Venice, where, under the personal influence of Titian, whose best pictures he reproduced, he developed an admirable style. In 1571 he went to Rome and established an influential school there. The art of engraving had previously been confined to small plates, and Cort was the first to use a larger size. He was the chosen engraver of the two Zucchari, Miziano, and the miniature painter Clovio, besides reproducing works of Raphael, Michelangelo, and other Italian and foreign painters in Rome. His work furnished a model for an entire generation in Italy, and until the appearance of Goltzius he was considered the foremost engraver. Among his pupils were Philippe Thomassin and Agostino Carracci. Consult Longhi, *Calcographia* (Milan, 1830), and Bartsch, *Anleitung zur Kupferstichkunde* (Vienna, 1821).

CORT, FRANS DE (1834-78). A Flemish lyrical poet, born in Antwerp. After being associated with the publication *Gronduet*, he was appointed editor of the *Schelde* (1858). He was secretary to the general auditor of the

military court at Brussels from 1861 until his death. He was one of the most distinguished lyrical poets of Belgium, and his songs, although not conspicuous for fancy or imagination, are full of deep and genuine sentiment. His works comprise: *Liederen* (1857-59); *Zing-Zang* (1866); *Liederen* (1868). He translated lyrics of Burns and Jasmin and German verse, and after 1861 conducted the periodical *De Toekomst*. He edited (1869) the posthumous poems of Dautzenberg (q.v.), his father-in-law.

CORTE, KÖRT. The capital of an arrondissement in the Department of Corse (Corsica, q.v.), at the confluence of the Tavignano and Restonica, 52 miles northeast of Ajaccio by rail (Map: France, S, M 6), picturesquely situated among the mountains and protected by a commanding citadel which has sustained many notable sieges. Corte was the seat of Paoli's reform government. A university founded by that patriot bears his name; a communal college, an ancient palace, from which Paoli ruled, and an old Franciscan monastery which served as the parliament house in 1765, and the house in which Paoli lived also remain. There are monuments to Paoli, General Gaffori, and General Casanova, Duke of Padua. Marble is quarried extensively in the neighborhood; lumber, wine, oil, and cheese are the staple products. Pop., 1901, 5425; 1911, 5211.

CORTEGIANO, kōr'tā-jā'nō, IL (the Courtier). A famous work on etiquette by Baldassare Castiglione (q.v.), published in 1528. There are English translations by Thomas Hobbes (1561) and by L. E. Opydyke (New York, 1903).

CORTELYOU, kōr'tel-yōō, GEORGE BRUCE (1862-). An American public official and capitalist. He was born in New York City, graduated from the State Normal School of Westfield, Mass., in 1882 and in law from Georgetown University in 1895, and was engaged in teaching until 1889, when he entered public service as a post-office inspector. He became stenographer to President Cleveland in 1895, assistant secretary to President McKinley in 1898, and two years later secretary. He was reappointed by President Roosevelt in 1901, and in 1903-04 was the first Secretary of the Department of Commerce and Labor. As chairman of the Republican National Committee he conducted the campaign of 1904. He was Postmaster-General of the United States in 1905-07, and Secretary of the Treasury in 1907-09, and in the latter year became president of the Consolidated Gas Company.

CORTE-REAL, or **CORTERREAL**, kōr'tā-rā'il, GASPAR and MIGUEL (c.1450-c.1501). Portuguese navigators. In 1500 Gaspar seems to have visited the North American coast at various points between Labrador and the Bay of Fundy. From his last voyage, begun in 1501, he did not return, although he sent back two of his vessels which did arrive safely. His brother Miguel in 1502 set out to find him and reached the northeast coast of America, but he too failed to return. In 1503 King Manuel of Portugal sent an expedition to learn their fate, but in vain. Consult Harrie, *Les Corte-Real et leurs voyages au nouveau monde* (Paris, 1883).

CORTES, kōr'tās (Sp., Portug. pl. of *corte*, court). The name given in Spain and Portugal to the assembly of representatives of the nation. As one district of Spain after another was recovered by the Christian princes from the Moors,

there arose in each a corporation composed of the different "estates" or orders of the population, limiting the power of the princes. From the union of several of these territories were formed the three leading kingdoms of Castile, León, and Aragón, each having its Cortes, representing the clergy, the nobility, and the cities. In Aragón the Cortes appointed a judge, known as the *Justicia*, who decided disputes between the King and his subjects and confined the royal power within constitutional limits. In Castile the rights of the burghers were less extensive than in Aragón, but in both states the King was dependent on the Cortes. After the union of Castile and León with Aragón the crown succeeded in greatly lessening the powers of the Cortes. After 1713 it did not meet till 1789, on the accession of Charles IV. In 1809 the Cortes, as composed in 1789, was assembled by the Junta, and framed a new constitution, called the "Constitution of 1812," which, however, was set aside at the Restoration. See SPAIN, *Government*.

The history of the Portuguese Cortes is very similar to that of the Spanish. In 1826 Dom Pedro promulgated a new constitution after the model of the French, calling the Cortes again into life, and abdicating at the same time in favor of his daughter, Maria da Gloria. This constitution was set aside during the usurpation of Dom Miguel, but was restored in 1842. The Constitution of the Republic, adopted Aug. 21, 1911, provides for a Cortes of two chambers, the lower house chosen by the people, and the upper by the municipalities. The Cortes elects the president, who serves four years, is not re-eligible, and cannot be present at the debates of the chambers. The members of the cabinet have a right to the floor of both chambers. Consult Muro y Martínez, *Constituciones de España* (Madrid, 1881); Desdésives du Dezert, *L'Espagne de l'ancien régime* (Paris, 1897-99); Colmeiro, *Cortes de los antiguos reinos de León y de Castilla* (2 parts, Madrid, 1883-84); Stephens, *Portugal*, in the "Stories of the Nations Series", Prescott, *Ferdinand and Isabella*.

CORTÉS, kôr-tās, HERNÁN or HERNANDO (1485-1547). Conqueror of Mexico. He was born at Medellín, in Extremadura, Spain, and was sent to the University of Salamanca, but his superabundant animal spirits and unrestrained passions for the fair sex cut short his university career. The same cause made it impossible for him to remain at home, and so he decided to try his fortune in the New World. An accident, received in scaling a tumble-down wall while on his way to a final clandestine rendezvous, postponed his departure until the spring of 1504, when he sailed for Santo Domingo. There he joined the forces engaged in suppressing a native revolt and quickly won promotion, so that in 1511 he was the chief executive officer with the expedition dispatched under Velásquez for the conquest of Cuba, becoming subsequently alcaide of Santiago. Mining and stock raising, although profitable, were not sufficiently to his taste, and he persuaded Velásquez to give him the command of an expedition to the mainland, made known at that time by the discoveries of Grijalva. No expense was spared in equipping a fleet of seven vessels, carrying 300 men. Velásquez, however, became suspicious lest Cortés should refuse to recognize his authority when once he was in a position to establish himself

independently. Learning that he was to be superseded, Cortés gathered his forces and set sail, on Nov. 17, 1518, before Velásquez could order him to resign the command. Stopping for supplies at the settlements on the coast of Cuba, he proceeded to Cozumel Island, sailed along the Yucatan coast, and fought a bloody battle with the natives at Tabasco. In the early spring of 1519 he landed at San Juan de Ulloa. There he obtained numerous captives, one of whom was the famous Mariana, whom he made his mistress, and who, out of devotion to him, acted as the interpreter, guide, and counselor of the Spaniards, and frequently saved them from serious reverses. Finding a better harbor a little north of San Juan, the Spaniards removed thither and established a town, naming it La Villa Rica de la Vera Cruz. An independent government was organized by vote of the settlers, who determined to renounce their allegiance to Velásquez and to acknowledge only the supreme control of the King in Spain. In order to prevent those who opposed this movement from deserting him and carrying the news to Cuba, Cortés dispatched one vessel to Spain with messengers to represent his cause at the court, and then sank the rest of his fleet.

Starting on his march inland, Cortés entered the country of the Tlascalans, who fought him vigorously for a few days, but soon came to terms with the strangers and joined them against the Aztecs, by whom the Tlascalans had been subjugated not long before. From this time until the conquest was achieved, the tribe continued the most important and trusty of all the native allies of the Spaniards. Advancing into the country of the Cholulans, Cortés succeeded, after a little fighting, in persuading the people to accept a reconciliation with their traditional enemies from Tlascala and to join them in his train for the march on Mexico. Motecuhzoma, or Montezuma, the Aztec chieftain, pursued an irrelative policy and finally determined not to oppose the Spaniards directly by force of arms, but to await their arrival and learn more of their purposes. On Nov. 8, 1519, Cortés entered the city of Mexico and established himself in one of its large communal dwellings, which had belonged to the family of Motecuhzoma's predecessors. The Spaniards were allowed to roam through the city at their pleasure and found much gold and other treasures in the storehouses. Realizing that a party among the native leaders were talking of driving the strangers out of town, Cortés induced Motecuhzoma to come to his house, where he was kept as a hostage. Shortly after, in April, 1520, messengers brought word that an expedition sent from Cuba by Velásquez under the command of Narváez, had landed at San Juan de Ulloa, with orders to arrest Cortés and send him to Cuba for punishment. Cortés promptly started for the coast with a small force. He found the camp of his enemies unguarded, entered on a dark night, captured Narváez, and the next day induced nearly all the soldiers to join his own standard. Meanwhile, in Mexico, Alvarado, who had been left in command, had learned that the Aztecs intended to attack him at the close of a great religious ceremony which was then being held. To prevent this, Alvarado suddenly surrounded the leaders, who were all busy with the sacrifices in one of the large courtyards of the town, and killed most of them. Cortés, as soon as all danger from Narváez was

past, hastened back to Mexico. He was allowed to enter the city peaceably, with his followers, but was immediately surrounded and attacked. As there was no possibility of maintaining his position in the city, for lack of food or water, and as all hope of persuading the natives to desist vanished when Motecuhzoma died, an immediate retreat was decided on. Selecting a dark, rainy night—the famous *Noche Triste*, on June 30—the Spaniards and their native allies started out of the city. The Mexicans pressed on behind them. The Spaniards were hurried along the causeways or driven into the water, where they were seized by Mexicans in canoes and dragged off to the city for sacrifice. Some 40 Europeans were captured alive, the great object of their enemies. Luckily for their fellows, the prospective sacrifices attracted the larger part of their assailants back into the city. Cortés retreated towards Tlascala. At Otumba he was confronted by an overwhelming force of his enemies. In despair the harassed Spaniards hurled themselves upon the Aztecs and crushed them. They nevertheless continued their retreat to Tlascala, where they recuperated during the summer.

The arrival of several vessels with men and war munitions enabled Cortés to reorganize his army, so that he was prepared to take the field again in October. The outlying Aztec strongholds were captured one by one, and the various subject tribes, ever ready to rebel against their native conquerors, gradually recovered confidence in the white men. Carpenters had been set to work at Tlascala in constructing a fleet of small vessels, which were hauled along a canal dug for the purpose into the Mexican lake, so that it became possible to attack the city by water as well as along the causeways which connected Mexico with the land. By the end of April, 1521, with a force of over 900 Spaniards, and 87 horses, Cortés again approached the capital. The city was attacked by columns along each of the three causeways from the shore, while the fleet of brigantines, with cannon, engaged the vast number of canoes on the lake. For three months the Aztecs defended their homes stubbornly. Street by street was taken by the Spaniards, who were obliged to tear down each house as soon as they had stormed it, to prevent the natives from returning to the attack. At last, on August 13, the chief, Guatemozin, who had been the principal organizer of the defense, was captured while trying to escape in a canoe, and the war ended. Cortés promptly set to work to repair the loss he had caused. The ruins of the city were used to fill in the marshy ground so as to afford a secure foundation for new edifices. Colonists were brought from Spain, and in a very short time the city of Mexico became the principal European city in America. Numerous expeditions were sent off in all directions, to Tampico, across Honduras to the Gulf coast, and to the Pacific, where Cortés established a shipyard in which were built the vessels he used later in his explorations of the Pacific coast.

Meanwhile his enemies in Cuba and Spain were planning Cortés's destruction. Officials were sent to Mexico to investigate his acts and supersede him, but he succeeded in persuading them to return without disturbing him. In 1528, however, when Estrada arrived with explicit orders to take over the government, Cortés yielded without opposition and took ship

for Spain. There he was welcomed with royal honors, was created Marquis of the Valley of Oaxaca, the fairest domain in the New World, and was reappointed captain general, although not restored to the civil governorship of Mexico. He married the daughter of the Count of Aguilar and niece of the Duke of Béjar. In 1530 Cortés returned to Mexico, where he amused himself for the next 10 years with schemes for further conquests. But the civil government being in other hands, he found himself constantly checked in his activity, his property detained from him, his rights interfered with, and his prestige rapidly waning. In 1536 he discovered Lower California and explored the Pacific coasts of Mexico, but no second treasure-trove awaited him. In 1539 Coronado secured the right to seek for the "Seven Cities" of Marcos de Niza, and in disgust Cortés went back to complain to the court. He was received with honor, but could secure no substantial assistance towards recovering his rights or his property. Joining an expedition to Algiers, he was shipwrecked, losing a large part of his fortune. He then retired to a small estate near Seville, where he died, Dec. 2, 1547. Prescott's *Conquest of Mexico* is, so far as Cortés is concerned, little more than an admirer's abstract of the conqueror's official dispatches, which may be consulted in Folsom's translation (New York, 1843). The "Fifth Letter," describing Cortés's adventurous trip across Honduras in 1524, is in the "Hakluyt Society Series" for 1868. Consult: Ober, *Hernando Cortés* (New York, 1905); Antonio de Solís, *Historia de la conquista de México* (Madrid, 1684; and a convenient edition in 5 small vols., Paris, 1827); and especially two recent works by F. A. MacNutt, *Letters of Cortés to Charles V, Translated and Edited, with a Biographical Introduction and Notes* (2 vols., New York, 1908), and *Fernando Cortés and the Conquest of Mexico: 1485-1547*, in "Heroes of the Nation Series" (ib., 1909).

CORTÉS, JOSÉ DOMINGO (c.1830-84). A Chilean author, born at Coquimbo. He was successively journalist, member of the Chilean Legation in Belgium, and director general of libraries in Bolivia. He published anthologies, histories, and biographical works, such as *Diccionario biográfico americano* (1876), *Historia de Bolivia*, *Los revolucionarios de la independencia de Chile*, and *República de México* (1872).

CORTÉS, SEA OF. See CALIFORNIA, GULF OF. **CORTEX** (Lat., bark). That region of a stem or root which occurs between the central vascular region (*stele*) and the epidermis. In those stems which increase in diameter each year the cortex becomes very much modified by the development of cork cells, being then usually called "bark." See MORPHOLOGY OF PLANTS.

CORTEX. See NERVOUS SYSTEM AND BRAIN. **CORTHELL,** ELMER LAWRENCE (1840-1916).

An American civil engineer, born at South Abington (now Whitman), Mass. From 1861 to 1865 he served in the First Rhode Island Light Artillery in the Civil War, returning to graduate from Brown University in 1867 and take up the practice of civil engineering. He served on railroad surveys and construction in Missouri and Illinois; with James B. Eads was resident engineer in constructing Mississippi jetties, and also cooperated with him in building a ship railroad over the Isthmus of Tehuantepec, Mexico; was chief engineer of the New

York, West Shore, and Buffalo Railroad, of the Merchants Bridge, St. Louis, the Brazos River jetties, Texas, Tampico (Mexico) harbor works, and the port of Pará, and Rio Grande do Sul, Brazil. From 1900 to 1902 he was consulting engineer of the National Public Works of the Argentine government. He is author of *History of the Mississippi Jetties* (1890); *Report on Brussels Navigation Congress* (1898); *Maritime Commerce of the World: Past, Present, and Future* (1898); *Some Ports of the World* (1901); *Argentina: Past, Present, and Future* (1903); *Allowable Pressure on Deep Foundations* (1907); *Engineering and Commercial Conditions and Problems in Latin America* (1911).

CORTINA, kôr-tě'nâ, JUAN NEPOMUCENO (1830-). A Mexican soldier and brigand, born in La Higuera, State of Tamaulipas. During the Mexican War he organized a band of cowboy guerrillas, later incorporated in the Mexican army. He fought at Palo Alto, rose to the rank of captain, but at the conclusion of the war was refused a commission in the regular army. Thereupon he turned smuggler. Later he rose to be a general in the liberal-revolutionist forces, but after his defeat by General Hinojosa was forced to escape to the United States. From 1859 to 1863 he held sway on the frontier, devastating the country and making such official appointments as he saw fit. He supported the cause of Maximilian in 1864, in 1867 again joined the Republicans, and in 1869 was appointed, by Juarez, federal chief of Tamaulipas. In 1876 he was arrested by General Canales, but instead of being executed, as General Diaz had directed, was incarcerated without trial in the military prison of Santiago Tlatelolco.

CORTINA RIUS. See FUNGI, EDIBLE, and Plate.

CORTISSOZ, ROYAL. An American art critic, born in New York City. He became literary and art editor of the *New York Tribune*, lectured on art, edited an edition of *Don Quixote* and *The Autobiography of Benvenuto Cellini*, and, besides contributions to magazines, is author of *Augustus Saint-Gaudens* (1907); *John La Farge* (1911); *Art and Common Sense* (1913). His wife, ELLEN MACKAY HUTCHINSON CORTISSOZ, associated with him in critical work, is author of *Songs and Lyrics*, and acted as associate editor of *The Library of American Literature* (11 vols.).

CORTLAND. A city and the county seat of Cortland Co., N. Y., 37 miles by rail south of Syracuse, on the Tiohoughoga River, and on the Lackawanna and the Lehigh Valley railroads (Map: New York, D 5). It is the seat of a State normal school and the Cortland County Hospital, and, as a manufacturing centre, produces extensively wire, wire cloth, carriages and wagons, carriage trimmings, drop forgings, conundrum wheels, motor trucks, broad silk, flour, piano cases, wall paper, etc. The government, under a charter of 1900, is vested in a mayor, a municipal council, and administrative boards and officials appointed by the executive, the appointments, except the board of education, being subject to the consent of the council. First settled in 1792, Cortland was included in the township of Homer until set off as Cortlandville in 1829. The water works are owned by the city. Pop., 1900, 9014; 1910, 11,504.

CORTONA, kôr-tô'nâ. A city in the Prov-

ince of Arezzo, central Italy, situated 2170 feet above the sea, 72 miles southeast of Florence and 4 miles north of Lake Trasimeno (ancient Trasimenus) (Map: Italy, F 4). It has well-preserved cyclopean walls, built more than 3000 years ago, 8500 feet in circumference, the ruins of old Roman baths, a museum of Etruscan antiquities, including a remarkable candelabrum with 16 lights, assembled by the Etruscan Academy, founded in 1726; the cathedral of Santa Maria, containing paintings by Luca Signorelli (q.v.), who was born here in 1441, as was Pietro Berettini, known as Pietro da Cortona (q.v.) in 1596. The fifteenth-century church of San Domenico also contains excellent paintings. The ancient Cortona, called "Kyrtonia" by Polybius, was the strongest of the 12 cities of the Etruscan League. As a Roman colony it lost its importance, but in the eleventh century again prospered. It sided mostly with the Ghibellines, came into the possession of the Casale family in the fourteenth century, in 1409 was given by the last of the house to King Ladislaus of Naples, and by him in 1412 to Florence. Pop. (commune), 1881, 26,353; 1901, 29,343; 1911, 29,659. Consult: G. Dennis, *Cities and Cemeteries of Etruria* (London, 1883), and A. Della Cella, *Cortona Antica* (Cortona, 1900).

CORTONA, PIETRO DA, properly PIETRO BERETTINI (1596-1669). An Italian painter and architect, born at Cortona. He studied under Commodi and Ciampi in Rome, where the greater part of his life was passed. He was the most important painter of his day, and was employed by popes, cardinals, and princes. Among the great decorative works intrusted to him were the frescoes of the ceiling in the hall of the Barberini Palace, Rome; decoration of the suite of rooms in the Pitti Palace, Florence, with paintings representing the seven virtues necessary for a sovereign (1640-47), and the frescoes in the church of Santa Maria in Vallicella. He was also superintendent of the mosaics for St. Peter's, and himself designed those of the chapels of the right aisle. Among his oil paintings are "The Battle of Arbela" (Louvre), painted for Louis XIV; a "Nativity" (Prado), painted for the Spanish King; "Daniel in the Lion's Den" (Accademia, Venice). Cortona founded a new style in Rome and did for painting what Bernini did for sculpture, accentuating the personal individual tendency in opposition to the classical trend of his age. He had a remarkable power of heightening the illusion in his frescoes, and the warm golden tones of his later works are admirable. As an architect, he designed the façade of Santa Maria in Via Lata, the portico of Santa Maria della Pace, and the church of Santa Martina, all in Rome. Consult his biographies by Fabbri (Cortona, 1896); Geisenheimer (Florence, 1909); Pollak, in *Kunst-kronik*, Neue Folge, xxiii (1912).

CORUMBA, kô-rô'm'bâ. A town of Brazil, in the State of Mato Grosso, on the west bank of the Paraguay River, about 325 miles south-east of Mato Grosso (Map: Brazil, F 7). The naval arsenal of Brazil is on the east bank of the river. Pop., 10,000.

CORUÑA, kô-rô'nyâ. A fortified seaport of Spain, capital of the province of the same name, in Galicia, situated on a small headland in the Atlantic, formed by two bays: the Ría de la Coruña and the cove of El Orzán, 315 miles northwest of Madrid (Map: Spain, A 1). It is built partly on the slope and partly at the foot

of a hill and is divided into the upper and lower towns, the former being the more ancient. The lower town, which was formerly an insignificant fishing village, is now more important and is well built, with broad and well paved streets. The ancient section, which is partly surrounded by the old walls, contains the more prominent edifices, though there are comparatively few public buildings of note in Coruña. The churches of Santiago and Santa María del Campo, of the twelfth century; the barracks, the Capitania-General, and the modern military hospital of San Carlos, are worthy of mention. The provincial institute has a considerable library and valuable scientific collections, and the city contains also a meteorological observatory, and various educational institutions, including a marine school. Other features of interest are the grave of Sir John Moore (q.v.), with a monument in the garden of San Carlos, and the so-called Torre de Hércules, of doubtful Phœnician origin, having been built more probably in the time of Trajan, which has served as a lighthouse for more than a century. The harbor, protected by five forts, two of which, San Antón and San Diego, defend the entrance, is safe and commodious. Coruña is the centre of an extensive commerce, the exports comprising live stock, fruits, vegetables, wine, hams, sardines, leather, péat, etc., while the principal imports are sugar, hides, coal, oil, and manufactured articles. There is also an important coastwise trade. The city has a variety of manufactures, including cigars, linen goods, canvas, cordage, lumber, barrels, paper, etc., and many of the inhabitants are employed in the fisheries. Pop., 1897, 40,500; 1900, 43,971; 1910, 45,650.

The chronicle history of Coruña dates from the Roman occupation. In the Middle Ages it was called Caronium. It was part of the emirate of Córdoba for some time, and suffered severely, with the rest of Galicia, in the reconquest. The Portuguese captured the town in 1370. Here John of Gaunt landed in 1386, to urge the claims of his wife, Doña Constanza, to the Castilian crown, and in 1554 Philip II sailed from the port to marry Queen Mary of England. Coruña was the point of departure of the "Invincible Armada" in 1588, and in the following year it was taken by Drake and Norris and nearly destroyed. The harbor was the scene of English naval victories over the French in 1747 and 1805. Coruña is famous for the repulse, on Jan. 16, 1809, of the French under Marshal Soult, by Sir John Moore, who succeeded in withstanding the French attempt to stop the English embarkation, but lost his life in the battle. The engagement took place on the heights of Elviña. In 1823 the city fell into the hands of the French. In 1836 it was captured by the Carlists. The result of the Spanish-American War in 1898 was disastrous to Coruña's trade with Cuba and Porto Rico.

CORUNDUM (Neo-Lat., from Hind. *Kurand*, corundum), or ADAMANTINE SPAR. An anhydrous aluminum peroxide that crystallizes in rhombohedral forms of the hexagonal system. Owing to their extreme hardness (in which corundum ranks next to the diamond) and their high specific gravity (from 3.95 to 4.10), the colored varieties are much sought after as gems. According to their colors, they are called sapphire, which is blue; Oriental ruby, which is red; Oriental topaz, which is yellow; Oriental emerald, which is green; and Oriental amethyst,

which is purple. In addition to these there is the *asteriated* or *star* sapphire, which exhibits an opalescent star of six rays. The dark-colored varieties are called *corundum*, and granular corundum is known as *emery*. The colored varieties of corundum are found chiefly in Burma, China, Ceylon, and in the United States, where it occurs in the crystalline rocks along the Appalachian Mountains, at Chester, Mass., in northern Georgia, and in Montana, where sapphires of gem grade have been found. Emery (q.v.), which is used as an abrasive material, is found in Asia Minor, at Chester, Mass., and in Canada. The imports into the United States are about \$100,000 annually, chiefly from Canada. See ABRASIVE.

CORUNNA. A city and the county seat of Shiawassee Co., Mich., 30 miles (direct) north-east of Lansing, on the Shiawassee River, and on the Ann Arbor and the Grand Trunk railroads (Map: Michigan, E 5). The public library and McCurdy Park are among the features. It has a trade in coal and manufactures flour, buffalo and astrachan cloths, vitrified brick, and furniture. Pop., 1900, 1510, 1910, 1384.

CORVALLIS. A city and the county seat of Benton Co., Ore., 96 miles south by west of Portland, on the Southern Pacific, the Portland, Eugene, and Eastern, the Oregon Electric, and the Corvallis and Eastern railroads, and on the Willamette River (Map Oregon, B 3). Corvallis is the seat of the State Agricultural College and contains a fine courthouse and city hall and a large college armory. River steamboat lines add to the transportation facilities. There is a considerable trade in grain, lumber, flour, live stock, and wool. Dairying, stock raising and the raising of fruit and berries are important occupations. The manufactures include lumber, flour, brick and tile, ice cream, cigars, etc. Pop., 1900, 1819; 1910, 4552.

CORVÉE, *körvä'* (Fr., from ML. *corvata*, demanded, from Lat. *corroqata*, demanded, sc. *opera*, work, from *com-*, with + *rogare*, to demand). An obligation imposed under the Roman law and continued under feudal law, whereby the inhabitants of a district performed certain services, such as repairs of the highway and bridges, for the sovereign or the feudal lord. Under the feudal lords *corvées* were greatly increased and diversified, but were usually determined by the local customs. Gradually the people succeeded in escaping from most of the *corvées* by substituting payments. But in some countries some burdens were long continued; e.g., French peasants were subject to some *corvées* until the French Revolution. Under the name of *prestation* the *corvée* system was revived, and was made the subject of various legislative modifications in 1824 and 1871. In some *arrondissements* all able-bodied men may be called upon to give three days' work for the upkeep of the roads. In England the Highways Act of 1837 did away with all statutory labor on the roads, but in Scotland the practice persisted until 1883, when it was abolished by law. The system was enforced by the Dual Control in Egypt, where, in 1882, 234,000 *fellahs* were called out for 100 days to clean the irrigating canals; but the obligation was gradually abolished until, in 1887, through the efforts of the British, the *corvée* for this purpose was wholly done away with, and the labor performed by contract. Other *corvées* were abolished by 1891, except the forced labor to guard against floods.

For the feudal corvées, consult Luchaire, *Manuel des institutions françaises* (Paris, 1902).

CORVEI, kôr'vi (ML. *Corbeia Nova*, New Corbeia, as it was first occupied by monks from Corbie). A Benedictine abbey of Germany, on the Weser, near Hóxter, the oldest and most famous abbey in Saxony. It was founded by Louis the Pious in the beginning of the ninth century, being a colony from the monastery of the same name in Picardy. It received rich endowments and was the centre of great agricultural improvement and prosperity during the earlier part of the Middle Ages, besides being the seat of a famous school. In 1793 it was made a bishopric by Pius VI. Its territory then embraced about 22 square miles, with 10,000 inhabitants. In 1802 it was secularized and annexed to Nassau, from which it was transferred, in 1807, to Westphalia, and in 1815 to Prussia. The church of the abbey is built in Gothic style, magnificently adorned in the interior, and contains a multitude of monuments of successive dynasties. The library and archives of the cloister, which contained most valuable records of the early ages of German history, have all been destroyed, the *Chronicon Corbeense*, an alleged record of this abbey from its foundation to the end of the twelfth century, being a forgery. Certain brief *Annales Corbeenses* from 648 to 1148 are, however, printed in the *Monumenta Germanæ Historica*. Consult Wigand, *Geschichte der Abtei Kórey* (Hóxter, 1819).

CORVETTE, kôr-vêt' (Fr., from Sp. *corbeta*, *corbeta*, lt. *corietta*, corvette, from Lat. *corbita*, slow ship of burden, from *corbis*, basket). In the days of sailing men-of-war, a corvette was a ship-rigged vessel (i.e., having three masts, all square rigged), carrying all her broadside guns on one covered deck. The upper deck, above the guns, was *flush* (i.e., was continuous from stem to stern, without poop or topgallant forecastle). Corvettes occasionally had a bow or stern chaser on the upper deck.

CORVIDÆ (Neo-Lat. nom. pl. from *corvus*, crow). A family of passerine birds which includes the ravens, crows, magpies, jays, etc. See these words, and Plate of JAYS, MAGPIES, ETC.

CORVINUS, MATTHIAS. See MATTHIAS CORVINUS.

CORVIN-WIERSBITSKI, kôr-vên'-vêrs-bit'ské, Otto von (1812-86). A German author, born at Gumbinnen. He took part in the revolutionary uprising in Baden in 1848 and 1849, and became chief of the general staff of the Republican forces at Rastatt. He was condemned to death, but the sentence was commuted to six years' solitary confinement. In 1855 he went to London, whence in 1861 he proceeded to the United States to act as the war correspondent of the Augsburg *Allgemeine Zeitung*. During the Franco-German War he was the correspondent of the *Vienna Neue Freie Presse*, and his experiences are admirably described in his well-known book, *In France with the Germans* (1872). In his earlier years Corvin devised "Corviniello," a species of metal work inlaid with mother-of-pearl, stones, or other materials. His numerous historical and other writings include: *Historische Denkmale des christlichen Fanatismus* (1845), the second edition of which appeared under the title *Pfaffenspiegel* (1869), and was further supplemented by *Die Geissler* (3d ed., 1892-93). Consult his *Erinnerungen*

aus meinem Leben (4th ed., Rudolstadt, 1890-92).

CORVO (Sp., crow). The most northerly and the smallest of the Azores (q.v.) (Map: Portugal, A 4).

CORVUS, MARCUS VALERIUS (c.370-270 B.C.). A general of the early Roman Republic. He was twice dictator and six times consul, and occupied the curule chair 21 times. He defeated the Gauls, the Volsci, the Samnites, the Etruscans, and the Marsi. He owed his name, tradition said, to the *corvus*, raven, which helped him to defeat a gigantic Gaul.

CORWIN, EDWARD TANJORE (1834-1914). An American writer, and historian of the Reformed Dutch church. He was born in New York City, July 12, 1834; graduated at the present College of the City of New York in 1853, and at the Theological Seminary in New Brunswick, N. J., in 1856. He has held various pastorates, but his reputation rests upon his literary work, which has made him the recognized historian of his denomination. His publications include: *Manual of the Reformed Protestant Dutch Church in North America* (1859, 4th ed. 1902), *Millstone Centennial* (1866), *A History of the Reformed Church, Dutch* (1895); *Ecclesiastical Records of New York* (6 vols., Albany, 1901-05). This is a translation and elaborate annotation of the letters which passed between the Classis of Amsterdam and the churches in the New Netherlands and Province of New York, and so are an important historical source. It is published by the New York State Library. He contributed to the first edition of the NEW INTERNATIONAL ENCYCLOPEDIA.

CORWIN, THOMAS (1794-1865). An American lawyer and statesman, born in Bourbon Co., Ky. He studied and practiced law in Ohio, where his eloquence soon won him prominence. He was a member of the State Legislature from 1822 to 1823 and in 1829, and of Congress from 1831 to 1840, when he was chosen Governor of Ohio. From 1845 to 1850 he was a member of the United States Senate, and in the latter year he became Secretary of the Treasury in President Fillmore's cabinet. He was again in Congress (1859-61) and was Minister to Mexico from 1861 to 1864. As an orator he won his greatest distinction, his speeches both on the stump and in debate being examples of remarkable eloquence. His arraignment of the administration for the war with Mexico in the Senate, Feb. 11, 1847, was a notable effort, which made him many enemies and damaged his political career. Consult Russell, *Thomas Corwin* (Cincinnati, 1882), and J. Morrow, *Life and Speeches of Thomas Corwin* (Cincinnati, 1896).

CORRY, CHARLES BARNEY (1857-). An American ornithologist, born in Boston. He became professor and honorary curator of zoology in the Field Columbian Museum in Chicago. His publications include: *Birds of the Bahama Islands* (1880); *The Beautiful and Curious Birds of the World* (1880); *Southern Rambles: Florida* (1881); *Montezuma's Castle* (1899); *The Birds of Illinois and Wisconsin* (1909); *Mammals of Illinois and Wisconsin* (1912); *Description of Twenty-eight New Species and Subspecies of Neotropical Birds* (1913).

CORY, WILLIAM JOHNSON (1823-92). An English poet, son of Charles Johnson, of Torrington, Devonshire; his mother was a grand-niece of Sir Joshua Reynolds. He was educated at Eton, and at King's College, Cambridge; was

graduated B.A. in 1845, and in the same year became fellow of his college. He was at once appointed assistant master of Eton, where he won great distinction as a tutor. In 1872, having inherited an estate at Halsdon, he retired from Eton and changed his name to Cory. His subsequent home was Hampstead, where he died, June 11, 1892. Cory is mainly known for a volume of verse entitled *Ionica* (1858, republished with additional poems in 1891), containing "Mimnermus in Church" and other poems of great tenderness and beauty. The volume was reissued, with additions, in 1891. He is also author of an agreeable *Guide to Modern English History from 1815 to 1835* (1880-82), of *Lucretius*, a treatise on writing Latin verse (1871), and of *Iophon* (1873), on Greek Iambics. After his death appeared his *Letters and Journals* (Oxford, 1897).

CORYAT, kor'yat, or **CORYATE**, THOMAS (1577-1617). An English traveler and author, born at Odcombe and educated at Oxford. He made an extensive tour of Europe, traveling mostly on foot, and published his experiences in a volume entitled *Coryat's Crudities* (1611; new ed., 1905). It was the first manual of continental travel and was illustrated with engravings. Parts of this work, consisting of mock verse commending the author, were published separately under the title *Odombian Banquet* (1611). Coryat made other voyages through Greece, Asia Minor, north Africa, and India, where he died.

CORYBANTES, kor'i-bân'téz (Gk. *Kopíβantes*, *Korybantes*). Mythical beings, attendant upon the Phrygian Cybele (q.v.), as the Curetes (q.v.) belong to the Cretan cult of Zeus and Rhea. Unlike the Curetes, with whom they were sometimes confused, the Corybantes were not believed to dance in armor, but rather to perform wild and orgiastic dances which frequently ended in ecstasy. The name does not properly denote priests, or human beings at all, since the Corybantes represent rather gods of procreative significance; but, as the priests of Cybele imitated these dances, the name is sometimes extended to them. Consult Frazer, *Adonis, Attis, Osiris* (London, 1907), Part IV of his *Golden Bough*.

CORYCIA, kô-rish'î-â (Lat., from Gk. *Kôρυκία*, *Kôrykia*). The mother of Lycoris, by Apollo. She was a nymph, whose name is preserved in that of the Corycian Cave on Mount Parnassus, and in the appellation Corycides applied to the nymphs of the cave and to the muses, who were worshipped on Parnassus. See CASTALIA.

CORYDALIS. See FUMARIACEÆ.

CORYDALIS (Neo-Lat., from Gk. *κορυδαλλίς*, *korydallís*, *korydós*, crested lark, from *kôrys*, *korys*, helmet) or DOBSON. A genus of large, net-veined insects (true Neuroptera), representing the family Sialididae, and peculiar to America, where its larva, used for bait under the names "crawler," "dobson," "hell devil," and many others, is the largest of our aquatic insects. The single species (*Corydalis cornuta*), often called "hell-grammite," is brownish green in color, about 2 inches in length, and expands its four nearly equal wings fully 6 inches. "In the female the jaws are very large, flat, and toothed at the extremity, but in the male they are remarkably long and slender, not toothed, and the sharp tips crossing each other; their only use is evidently for seizing the soft, somewhat yielding body of the female during the act

of pairing; hence during its short life the male, at least, takes no food." The female lays her eggs in midsummer, in white chalky masses almost an inch wide, on tree leaves, rocks, timbers, etc., overhanging water, into which the young drop as soon as hatched. These sink to the bottom and grow rapidly into large, slate-gray, tough, predatory larvae, which hide under stones, etc., in the rapid streams where they most abound, clinging firmly to some support with their anal hooks, while they seize in their jaws such living creatures as come within their reach. They remain in the water 2 years and 11 months, then creep out upon land, where they wander about at night for a few days, then pupate in some retreat, and speedily emerge as adults. The larvæ (dobsons) are regarded as the most satisfactory bait known for still fishing, and are captured with nets, after overturning stones, etc., and frightening them out into the open water. For the many interesting peculiarities of the structure and economy of this and other species of the Sialididae (called "adder flies" in England), consult: Howard, *The Insect Book* (New York, 1901); Packard, *Standard Natural History*, vol. ii (Boston, 1884); Miall, *The Natural History of Aquatic Insects* (London, 1895); Kellogg, *American Insects* (New York, 1908); Davis, "Sialididae," in *Aquatic Insects in New York State* (Albany, 1903).

CORYDON. A town and the county seat of Harrison Co., Ind., 25 miles west by south of Louisville, Ky, on Indian Creek and on the Louisville, New Albany, and Corydon Railroad (Map: Indiana, C 4). It is known as a summer resort, one of its attractions being a sulphur well. Corydon was the capital of the Territory of Indiana from 1813 to 1816, and of the State of Indiana from 1816 to 1825, when the seat of government was removed to Indianapolis. The old capitol is still standing. The Constitutional Convention of 1816 met here. In 1863 the town was the scene of a sharp skirmish between a small force of State militia and a superior force of Confederate raiders under John Morgan. Pop., 1900, 1610; 1910, 1669.

CORYDON. A town and the county seat of Wayne Co., Iowa, 81 miles (by rail) south by east of Des Moines, on the Keokuk and Western and the Chicago, Rock Island, and Pacific railroads (Map: Iowa, D 4). Corydon is essentially an agricultural town and exports a large amount of timothy seed. The electric-light plant, sewer, and water works are under municipal ownership and control. Pop., 1900, 1477, 1910, 1703.

CORYDON. 1. A shepherd in the *Idyls* of Theocritus, and in the second and the seventh Eclogue of Vergil, and hence a name conventionally used in literature to designate a country swain, as in Spenser's *Faerie Queene* and *Colin Clout*. 2. A shoemaker in Scott's *Count Robert of Paris*. 3. A musical countryman in Walton's *Compleat Angler*, who fraternizes with Piscator.

CORYLUS. See HAZELNUT.

CORYMB (from Lat. *corymbus*, from Gk. *κόρυμβος*, *korymbos*, cluster, from *kôrys*, *korys*, helmet). A flat-topped flower cluster, in which the pedicels arise at different levels upon an elongated axis and the outermost flowers bloom first. See INFLORESCENCE.

CORYMBUS (Lat., cluster). That mode of dressing the hair which prevailed among the Greek women and which may be seen in examples of the antique, particularly in the statues representing Venus. This arrangement of

the hair was also adopted by the Romans. It consisted in gathering it upward upon the crown and back of the head in one knot. It may be seen in its simplest form in the statue of the Venus de' Medici, in the Uffizi Gallery, Florence.

CORYNACTICS. See SEA ANEMONE.

CORYPFA. See FAN PALM; GERANG PALM.

CORYPHENE (Lat. *coryphæna*, from Gk. *κορυφαία*, *koryphaina*, a sort of fish, from *κορυφή*, *koryphê*, summit), DORADO or DOLPHIN. One of a genus of fishes (*Coryphæna*) of the family Coryphenidae, to which the name "dolphin," properly belonging to the Cetacea, has been popularly transferred. The coryphenes are allied to the opahs, and are remarkable for the beauty and metallic brilliancy of their colors, which delight the spectator as the graceful fish are seen gliding with extreme rapidity near the surface of the water, gleaming in the light, and the changes the colors undergo while the fish is dying have acquired a poetic celebrity. They have an elongated compressed body covered with small scales, the head rising in a sharp crest, the mouth large. They are large fishes, attaining a length of 6 feet, and are inhabitants of the high seas of warm climates, where they chase the flying fishes and other surface prey with great speed and voracity. The common, almost cosmopolitan coryphene (*Coryphæna hippurus*) occurs on the coast of the United States as far north as Cape Cod. "They are often caught by sailors at sea and are considered most excellent food. It is an almost universal custom before eating them to test the flesh by putting a piece of silver into the vessel in which they have been cooked, it being a common belief that if the flesh is poisonous the silver will turn dark." (Goode.) See Plate of HORSE MACKEREL.

CORYPE'ODON (Neo-Lat., from Gk. *κορυφή*, *koryphê*, summit + *ὀδούς*, *odous*, tooth). A fossil amblypod mammal of the Lower Eocene beds (Wasatch) of western America, related to *Tinoceras* and the *Uintatheria*. A complete skeleton of *Coryphodon radians* has been found, and is mounted in the American Museum of Natural History in New York City. It shows an animal between 5 and 6 feet in length, with large skull, formidable teeth, short neck, rather long body, and short, strong, bowed legs with spreading toes. The brain cavity is remarkably small. The skeleton indicates a heavy, clumsy animal that lived in the bordering marshes of the Wasatch lakes, feeding on succulent water plants. *Coryphodon* remains have also been found in the Eocene beds of Europe. Consult Osborn, "A Complete Skeleton of *Coryphodon radians*," *Bulletin of the American Museum of Natural History*, vol. x (New York, 1898), and Knipe, *Evolution in the Past* (London, 1912). See TERTIARY SYSTEM; TINOCERAS; UINTATHERIUM.

CORYZA. An inflammation of the nasal and ocular mucous membrane, with discharge of thin mucus. Preceded by a chilly feeling and a slight rise of temperature, it constitutes the invasion of measles, whooping cough, la grippe, and certain fevers, and is constant during hay fever (q.v.). Constipation or uric-acid diathesis is often the underlying cause for its appearance; the exciting cause is nearly always bacterial infection. Relief in the simple forms follows the use of alkaline laxatives, nasal spraying with mild antiseptic solutions, and the correction of any

diathesis such as rheumatism. If neglected, the mucous membrane affords an inviting field for the germs of *grippe*, pneumonia, etc.

COS, or **KOS** (Gk. *Κῶς*, *Kōs*, It. *Stanchio*, Turk. *Istankoi*). One of the Dorian Sporades, off the southwest coast of Asia Minor, now belonging to Turkey. Cos is about 23 miles long, and about 74 in circumference. On the southern side of the island a range of hills, called Prion, extends along the coast; the western half of the island is also mountainous, but the eastern portion north of the jagged ridge of Mount Prion is a fertile plain, producing the grapes and the sultana raisins which furnish the chief modern exports. The population is estimated at about 10,000. In ancient times the island was famous for its perfumes, wines, and silk (probably produced from an inferior variety of worm), from which were woven the transparent Coan garments (*Coa vestis*) worn by the courtesans of Greece and Rome. There are many mineral springs on the island, which early became an important seat of the worship of Asclepius (q.v.). The precinct of Asclepius, on Mount Prion, was excavated in 1900-04; it had a continuous history from the sixth century B.C. to 554 A.D. Cos was the birthplace of the great physician Hippocrates (q.v.) and of Apelles (q.v.). The chief town, Cos, is situated on the northeast coast, on the site of the ancient city. In the centre of the main street is a gigantic plane tree, said to have stood there before the Christian era. To the northwest is an old fortress of the Knights of St. John. The harbor is small and so filled with mud as to be available only for small boats. The inhabitants are employed chiefly in agriculture. Cos is mentioned in the *Iliad* among the allies of the Greeks, and the island seems to have been early colonized. Later it was the seat of a Dorian colony, apparently from Epidaurus (q.v.), and became a part of the Dorian Hexapolis. It was a member of the Athenian League, and in the fourth century B.C. enjoyed a prosperity which increased under Alexander and his successors. It was the birthplace of Ptolemy II Philadelphus, and the home of Philetas, the bucolic poet, who founded on the island a school of which Theocritus (q.v.) was the most distinguished member. From the Latin conquest of Constantinople (1204 A.D.) till its capture by the Turks in 1523, Cos shared the vicissitudes of Rhodes and the neighboring islands. In 1912, in the course of the Turco-Italian War (q.v.), it was seized by an Italian fleet, but Italy, by the Treaty of Lausanne (Oct. 15, 1912), engaged to restore to Turkey the *Ægean Islands* on condition that a general amnesty should be granted to the inhabitants and that local autonomy and public liberty should be guaranteed. The contemporaneous outbreak of the Balkan War (q.v.) aroused a vigorous agitation among the Greek islanders of Cos for union with the Greek Kingdom. It was agreed by the Treaty of London (May 30, 1913) that the final disposition of all the *Ægean Islands* should be left to the Powers, in the meanwhile Italian occupation of Cos continued. Consult: Rayet, *Mémoire sur l'île de Cos* (1876), Paton and Hicks, *Inscriptions of Cos* (Oxford, 1891), Herzog, *Koische Forschungen* (Leipzig, 1899); *Archäologische Anzeiger* (1895).

COSA, *kō'sá*, JUAN DE LA (c.1460-c.1512). A Spanish navigator and cartographer, born in Santofia (Santander). He accompanied Colum-

bus on his first and second voyages, and after returning to Santaña for a brief period, settled in the Puerto de Santa María (Province of Cádiz), where he became famous as a cartographer. He was the principal pilot of the expeditions sent out under Ojeda (1499) and Rodrigo Bastidas (1500) to explore the coast of Venezuela. After two other successful voyages (1504-07 and 1507-08) he was appointed by Juana hereditary *alguacil mayor* of Urubá. Isabella, in 1503, had appointed him to this position, but had not made the title hereditary. Late in 1509 he fitted out three vessels with which he set sail for Santo Domingo to meet Ojeda, who had been appointed general of Nueva Andalucía. In Santo Domingo he served as arbiter between Ojeda and Nicuesa in a dispute over the boundaries of their respective territories and jurisdiction. In 1510 Cosa had to defend himself from Portuguese accusations that he had made discoveries and explorations beyond the line set for the Spaniards. Later Cosa accompanied Ojeda to South America, where the entire party, with the exception of Ojeda and one other, was massacred by Indians while trying to land in Cartagena Bay, Cosa losing his life in deliberate defense of Ojeda. In 1500 Cosa made a large map of the world, probably the first to be prepared after 1492 and the first, therefore, to include the New World. For this reason it is of the greatest value to cartographers and historians, and many reproductions of the part relating to America have been made. It was accidentally discovered by Humboldt in the library of Baron Valeknaer in Paris in 1832, and since 1856, when it was acquired by the Spanish government, has been in the Naval Museum in Madrid. On several occasions parts of it have been reproduced, but M. Jomard's is the only reproduction of the whole map, on the original scale and with the original colors.

COSCINOMANCY (from Gk. *κόσκιον*, *koskion*, sieve + *μαντεία*, *mantéia*, divination). A species of divination, practiced from the earliest times by means of a sieve and a pair of shears or forceps. Tylor (*Primitive Culture*, 4th ed., vol. 1, p. 128) says: "The sieve was held hanging by a thread, or by the points of a pair of shears stuck into its rim, and it would turn, or swing, or fall, at the mention of a thief's name, and give similar signs for other purposes." The ordeal of the Bible and key is a survival of the old custom. The fiftieth Psalm is read, and when the verse beginning "When thou sawest a thief" is reached, the apparatus is expected to turn towards the culprit. See SUPERSTITION.

COSE/CANT. See TRIGONOMETRY.

COSEGÜINA. *kō'sä-gwē'na*, or **COSIGÜINA**, *kō'sē-gwē'nä*. A volcano in the extreme northwest corner of Nicaragua, Central America (Map: Central America, D 4). It is situated on a small peninsula which partly separates the Gulf of Fonseca from the Pacific; it has an altitude of over 3000 feet. Its latest eruption, on Jan. 20, 1835, is famous as the most violent in history. The sky was darkened by the ashes during three days for a distance of 100 miles from the crater, and ashes fell as far away as Jamaica and Bogota, Colombia. The explosion was said to have been heard in the city of Mexico, 900 miles away.

CÖSEL, or **KOSEL.** The capital of a district of Silesia, Prussia, on the river Oder, at the confluence of the Klodnitz, 25 miles southeast of Oppeln (Map: Prussia, H 3). It is a garrison

town, has a castle, and was formerly surrounded by walls, the site of which has been converted into boulevards. A fine monument commemorates the unsuccessful siege by the French in 1807. The town manufactures celluloid, lumber, flour, malt, beer, bricks, and refined petroleum. It was the capital of a former duchy in the fourteenth century. Pop., 1905, 7085; 1910, 7832.

COSELEY, *kōz'li*. A manufacturing town in Staffordshire, England, a suburb of Wolverhampton (Map: England, D 4), with which its industries and public works are identified. It has iron, coal, and cement mines, manufactures of iron goods and stoves. Pop., 1901, 22,219; 1911, 22,834.

COSENTIA. See COSENZA.

COSENZ, *kō'sānz*, **ENRICO** (1820-98). An Italian soldier, born at Gaeta. He entered the military service of Naples in 1840, participated in the campaign in Upper Italy (1848), and afterward was prominent in the defense of Venice against the Austrians. In 1859 he became a colonel in the "Hunters of the Alps." Garibaldi's corps, and in 1860 took part in the expedition to Sicily. Upon Garibaldi's assumption of the dictatorship of Naples, he was appointed Minister of War. He commanded a division in the attack on Rome in 1870, and from 1881 until his retirement in 1893 was chief of the general staff of the Italian army. He also held civil office as a deputy from 1860, and senator from 1872.

COSENZA, *kō-zēnt'sā* (Lat. *Cosentia*). The capital of the Province of Cosenza (Calabria Citeriore) at the confluence of the Crati and Busento rivers, in south Italy, situated 120 miles southwest of Taranto, and only a short distance from the Mediterranean (Map: Italy, L 8). It is commanded by a castle, whose walls, 9 feet thick, were shattered in the earthquakes of 1783, 1854, and 1870. The older and lower part of the town is infected with malaria in summer. The cathedral, of the thirteenth century, which has been restored, contains the tombs of Louis III of Anjou, and Isabella, consort of Philip III of France, who died here in 1435. In the attractive public gardens, near the prefecture and the new theatre, are a figure of Liberty by Giuseppe Pacchioni, erected in 1879 to the brothers Bandiera and others who took part in the Calabrian rebellion of 1844, and busts of Garibaldi, Cavour, and Mazzini. There are a seminary, a royal college, a technical school, two academies of science and fine arts, and a chamber of commerce. Cosenza markets silk, oil, wine, manna, hemp, grain, and honey, and manufactures faience, iron and steel ware. Alaric, King of the Visigoths, died here in 410 while on his way to Sicily after the spoliation of Rome. Tradition has it that he and his treasures were buried just below the town in the Busento (ancient Buxentus), where the Crati joins it—a spot now marked by the Ponte Alerico. The city is subject to earthquakes, having suffered many severe shocks. Pop. (commune), 1881, 16,253; 1901, 21,545; 1911, 23,805.

COSETTE, *kō'sēt'*. The adopted daughter of Jean Valjean in Hugo's *Les Misérables*.

COSHOCKTON, *kō-shōk'ton*. A city and the county seat of Coshocton Co., Ohio, 69 miles east-northeast of Columbus, on the Pennsylvania, the Pittsburgh, Cincinnati, Chicago, and St. Louis, and the Wheeling and Lake Erie railroads, on the Ohio Canal, and on the Muskingum River (Map: Ohio, G 5). It con-

tains a city hospital, Carnegie library, park and fair grounds, and a fine courthouse. Co-shocton is in the centre of a coal, gas, and oil region, and has several novelty advertising establishments, machine shops, pipe works, automobile, carriage, furniture, and glass factories, potteries, paper and flour mills, etc. Settled in 1811, the city was incorporated in 1833. The water works are owned and operated by the municipality. Here, after a long struggle, Colonel Boquet concluded a treaty with the Delaware Indians in 1765. Pop., 1900, 6473; 1910, 9603.

COSÌ FAN TUTTE (It., all women act alike). An opera by Mozart (q.v.), first produced in Vienna, Jan. 26, 1790.

COSIGUINA. See COSEGUINA.

COSIMO, kō'zè-mō, PIERO DI. See PIERO DI COSIMO.

COSIMO DE' MEDICI, dā mā'dé-chē. See MEDICI.

COSIN, kūz'n, JOHN (1594-1672). An English prelate. He was born at Norwich and was educated at Cambridge. After holding rectorates at Elwick, Brancepeth, and elsewhere, he assumed charge of St. Peter's College, Cambridge, in 1635. Three years afterward he was made vice chancellor of the university and in 1640 was appointed Dean of Peterborough. He was chaplain to Charles I and subsequently joined the royal family in Paris, where for nearly 20 years he conducted religious services in the household of Queen Henrietta. In 1660 he was appointed Bishop of Durham. Although by no means inclined towards Puritanism, he was an inveterate antagonist of Roman Catholicism, and during his long residence in France was regarded as the champion of the Protestant cause in that country. Many of the finest prayers in the English church were written by him, while his other numerous writings are imbued with the force and brilliancy of his interesting personality. He was celebrated for the remarkable frankness with which he defended his views, even under the most unfavorable conditions, and by his splendid administrative ability in the church. His works include: *Collection of Private Devotions*, prepared at the request of King Charles I and first published in 1627; *Scholastical History of the Canon of Holy Scripture* (1657); *Historia Transubstantiationis Papalis* (1675); *Notes on the Book of Common Prayers* (1710). A collected edition of his works was published (5 vols.) in 1843-55, and his *Correspondence* (2 vols.) in 1868-70.

CO'SINE. See TRIGONOMETRY.

COS'MAS (Lat., from Gk. Κοσμάς, *Kosmas*), surnamed ΨΥΔΙΚΟΕΥΕΣΤΗΣ (i.e., Indian navigator). A merchant of Alexandria, in which city he was probably born, who, after having traveled much in eastern Asia, including India and Ceylon, returned to Egypt and ended his days in monastic retirement about the middle of the sixth century. While a monk he wrote a *Christian Topography* in 12 vols., in the Greek language, containing much information about many countries and particularly about India. An attempt to reconcile everything to his notions of the meaning of the Bible led him into many errors, but though deficient, and even absurd scientifically, as a record of travel and geographical information, the eleventh book, which gives a description of the animals of India and of the island of Ceylon, takes high rank. His other works, which seem to have included a

treatise of the motion of the stars, and commentaries on the Psalms and Canticles, have perished. *The Topography* (which, among other things, gives the first account of the *Monumentum Adulitanum*; see ADULE) was edited by Montfaucon in the *Nova Collectio Patrum Græcorum*, vol. ii (Paris, 1707), reprinted by Migne, *Patrol. Græca*, lxxxviii, translated by Charton in his *Voyageurs* (Paris, 1854), and in English by McCrindle (London, 1897). An edition was edited by Winstedt (Cambridge, 1910).

COSMAS (Lat., from Gk. Κοσμάς, *Kosmas*) and **DA'MIANUS** (Lat., from Gk. Δαμιανός). Two Arabian brothers of the third century, Christian martyrs under Diocletian. They practiced medicine without fee (whence they came to be known as "The Silverless") at Ægea in Cilicia, and, having refused to sacrifice on pagan altars, were beheaded in 303. Their day in the calendar of the Roman church is September 27. They are honored as the patron saints of physicians and apothecaries. A short-lived order of knights spiritual, named after them, was instituted during the Crusades. A round temple on the north side of the Roman Forum, built by the Emperor Maxentius to his son Romulus, was converted into a church in their honor in 526. Its mosaics are among the most valuable in Rome.

COSMAS OF PRAGUE (c.1039-1125). A Czech historian, dean of the cathedral at Prague. His works, particularly his "Chronica Boemorum," printed in the second volume of the *Fontes Rerum Bohemicarum* (Prague, 1874), constitute a very complete and accurate record of the history of the times.

COSMATI, kōs-mā'tē. The popular name of a group of mediæval Roman architects and decorative marble workers, from Cosmas, the name of two important members. The group was composed of two families: one descending from a certain Tebaldo, who was father of Lorenzo, grandfather of Giacomo, and great-grandfather of Cosmas I, and flourished about 1150-1250; the other founded by Pieter Melini, father of Cosmas II, the most prominent of whose sons were Giovanni and Deodato, active from about 1250 to 1350. It dispersed with the departure of the popes for Avignon and the fall of Rome as an artistic centre. The specialty of this school was the use of rich mosaic inlay in geometric patterns in architecture and church interiors and furniture—a style often called *Cosmati work*. But it was not confined to this family, being a style common to all the other family groups of artists of mediæval Rome and its neighborhood, such as the families of Paulus and Vassallettus. The beautiful cloisters of St. John Lateran, St. Paul Without the Walls, and Santa Sabina in Rome are the most familiar of their large works. The choir seats at San Lorenzo, the tabernacles at Santa Cecilia and St. Paul's, the pulpits at the Araceli, the tombs at the Minerva and Santa Maria Maggiore, the paschal candlestick at Santa Cecilia, the pavements of these and many other Roman churches, show the versatility and universal use of this style. But most of the finest works are scattered throughout the province, at Civita Castellana, Subiaco, Corneto, Alatri, Anagni, Alba, Ferentino, Terracina, and other cities. The architectural as well as the decorative work was probably designed and executed by these artists. That the style was Roman is shown by the in-

scription of 1229 in the charming cloister of Sassovivo in Umbria, where the artist calls it *Roman work*. However, there were two other contemporary Italian schools which produced similar work: that of Campania, with centres at Salerno, Sessa, and Gaeta; and that of Sicily, in the churches of Palermo, Monreale, Cefalù, and others.

Consult: Boito, *Architettura Cosmatesca* (Milan); Frothingham, "Notes on Roman Artists of the Middle Ages," in early volumes of *American Journal of Archaeology*; G. Clausse, "Les Cosmati," in *Revue de l'art chrétien* (1897); *Les marbriers romains* (Paris, 1897); Tommasetti, *Bollettino della Commissione Architettura Comunale* (Rome, 1906); Filippini, *La Scultura nel trecento in Roma* (Turin, 1908).

COSMETICS (Gk. *kosmêdo*, *kosmêō*, I adorn). The term is used to indicate (1) all the mixtures and preparations employed for the purpose of beautifying and improving the appearance of the hair or skin; (2) the art which serves to adorn, beautify, and improve a person's looks and appearance.

The preparations used are liquids, ointments, creams, and powders. Liquids are used chiefly for the hair in order to produce a more luxurious growth, or to impart to it a strong gloss, or to effect a change in its color, as by means of hair dyes and hair bleaches. The liquids used usually contain alcohol and oil in dilution; some containing also medicinal substances, such as quinine and cantharides, intended to act as a stimulant to hair growth. These preparations are all applied to the hair and scalp, followed by brisk rubbing or massage. It is the massage chiefly, if not wholly, that brings about the desired result, since the friction improves the circulation of the scalp and thus by nourishing the hair roots causes a more healthful condition and rapid growth of the hair. The cleanliness imparted to the scalp by the liquid preparation used and the rubbing likewise enhances hair growth. The ordinary hair tonic is not injurious, but hair dyes and hair bleaches frequently contain poisonous ingredients and are apt to be injurious both to the hair and to the general health.

For the face and hands various massage creams, vanishing creams, ointments, and powders are prepared. Some of the creams have carmine red incorporated into them to act as a rouge and to give a pink color to the skin of the face. The massage creams are made of casein, glycerine, fat, and water with some perfume added thereto. There are other preparations made of starch or chalk; and still others, like the pearl white, contain a white bismuth powder which is deposited as a fine white flour upon the skin. All these preparations for the skin are more or less harmful, because they clog up the skin's pores, thus interfering with its proper physiological functions and with its nutrition.

The cosmetic art includes a variety of procedures and manipulations by means of the hand and by the assistance of certain electrical appliances and vibrators. Manicuring and artistic hair dressing properly belong to the cosmetic art. Facial massage and the removal of wrinkles manually and by the vibrator are likewise cosmetic procedures. Cosmetic surgery is that branch of the surgical art practiced expressly for the purpose of improving a person's looks and not to cure disease. The procedures are

various, ranging from the removal of superfluous hairs by means of the electric needle to the removal of naevi, or birthmarks and moles. The correction of harelip and certain nasal deformities, as the hammer nose, are procedures of cosmetic surgery. See **PERFUMERY**; **ROUGE**.

COSMIC DUST. See **DUST**.

COSMOGONY (Gk. *kosmogonia*, *kosmogonia*, from *kósmos*, *kosmos*, order, world, universe + *gonê*, *gonê*, birth, origin). A name used by astronomers to designate theories concerning the origin and development of the solar system, stellar systems, or the universe in general. Many remarkable facts connected with our solar system tend to show that its present condition cannot be the result of a purely accidental action of natural forces. Thus, the orbits of all the important planets are very nearly circular and are situated nearly in the same plane; the directions of the planets' motions in their orbits are the same for all; all the planets, with the probable exception of Uranus and Neptune, rotate in the same direction on their own axes, and that direction is the same as the direction of their orbital revolutions, etc. Even the planetary satellites share in these peculiarities of the solar system; the planes of their orbital revolutions about the primary planets are always very near the corresponding planes of the planets' own axial rotations, and the directions of the satellites' revolutions also coincide with the directions of the planets' axial rotations.

The Nebular Hypothesis. Kant and Laplace have given us the well-known "Nebular Hypothesis," later developed by Sir W. Herschel, to account for the state of affairs existing in the solar system. According to this hypothesis, the material composing the system was originally a mass of intensely hot nebulous or gaseous matter that tended to assume a rotating globular form under the action of gravitational forces. Gradually the mass contracted, and successive rotating rings of matter were from time to time, as it were, left behind. These rings, in turn, broke up, and the matter of each formed a planetary system in which again rings and satellites could form just as in the parent nebular mass.

Darwin's Hypothesis. In 1885 Sir George Howard Darwin showed mathematically that the present condition of our earth and moon (the revolution of the moon and its axial rotation being synchronous) might have been brought about by the action of the tidal friction working continuously through successive ages of cosmic time. Indeed, it is quite reasonable to suppose that, when earth and moon were nearer together, and as yet in a more or less plastic condition, very gigantic tides must have been set up—tides involving the earth's semisolid matter, as well as the oceans of water and air. Darwin's researches have brought out the fact that such tides must produce important modifications in any system of celestial bodies.

The Meteoric Hypothesis. Sir Norman Lockyer's so-called Meteoritic Hypothesis assumes that space was originally occupied by swarms of meteors (q.v.), and that collisions between these swarms gave rise to condensations from which the stars have been gradually built up by accretion.

The Planetesimal Hypothesis. Modern research has shown that the nebular hypothesis is unable to explain all the phenomena presented by planetary systems, and, in order to overcome

the difficulties which arise, Professors Chamberlin and Moulton, of the University of Chicago, have recently put forward a theory which the former calls the "Planetesimal Hypothesis." It may be regarded as a combination of the nebular and meteoritic hypotheses. Led to the conclusion by the large number of spiral nebulae which have been brought to light by modern telescopes, the propounders of this theory suppose the solar system to have developed from such a nebula. This they imagine to have had its origin at a time when another sun passed near our own. This nebulous mass was composed of a great number of small masses, but throughout it there were primitive nuclei of considerable dimensions around which have gathered accretions of the scattered material, thus giving rise to the planets. See NEBULÆ; SOLAR SYSTEM; SUN; ETC.

Ancient Cosmogonies. Scarcely any people, either ancient or modern, has been without some theory concerning the creation of the world. The cosmogonies of chief interest in connection with our own views are those of Babylonia, India, Iran, Greece, and ancient Germany. The Babylonian system resembles in many respects the cosmogony of the Bible. There was darkness and water, with strange monsters. Into this chaos the god Bel entered, and clove the cosmic sea, and parted the darkness. Animals took the place of the former monsters, and man himself was created, as well as the sun and moon and five planets. In some of the latest hymns of the Rigveda (q.v.) water was the source of all, whence came fire and wind—the breath of divinity. Or, again, the world arose from the sacrifice of Man (Skt. *parusha*), whose head became the sky, his feet the earth, his eye the sun, his breath the wind, while from his mouth, arms, thighs, and feet the four castes sprang. These ideas, developed more fully in the pseudoepical Sanskrit *Purānas* (q.v.), exhibit clearly the pantheistic trend of Hindu thought. The rôle of Kāma or Love in Indian cosmogony bears some resemblance to that of the Greek Eros. Iranian cosmogony, as we find it in the *Avesta* and the writings in Pahlavi (q.v.), corresponds to the dualistic character of the Zoroastrian religion. Ormazd, the god of everlasting light, created the good in opposition to Ahriman, the devil, who dwells in eternal darkness. In the course of a period of 3000 years Ormazd created the heaven, water, earth, plants, animals, and man. In the following 3000 years Ahriman produced evils to combat these creations of Ormazd; but, despite some temporary success, he was finally forced to yield to the powers of good.

Greek cosmogony is more varied. The Homeric poems regard Ocean as the source of the world, while the Hesiodic account ascribes the first beginnings to Chaos. Thales followed the first theory, and Anaximander the second, which has its parallel also in India. Anaximenes considered air to be the source of all, while Heraclitus postulated fire as the primal element, and supposed a constant flux of all things, where only the divine law (Zeus) was immutable. The notion of Eros or Love as a cosmic force was introduced into Greek philosophy by Parmenides and Empedocles, for which Anaxagoras substituted Mind (Gk. *noûs*). Of special interest in this connection is the atomic theory of Democritus, according to whose view the world is permeated by a soul which is composed of atoms in continual motion, and which partakes of the nature of fire. Later Greek philosophy

did hardly anything towards the development of cosmogonic ideas.

For Germanic beliefs on this subject, the most comprehensive source is the *Völuspá*, an Icelandic poem of the twelfth century of our era.

Bibliography. For the cosmogonic ideas of the Egyptians consult the studies of Naville. The cosmological views of the American Indian and Eskimo tribes, of the African races, and of the peoples of Farther Asia and the islands of the Eastern seas, may be gathered from the writings of Brinton, Grey, Tylor, and others. The Hindu theories will be found in Hopkins, *Religions of India* (Boston, 1895), and the Persian in Jackson, "Iranische Religion," in Geiger und Kuhn, *Grundriss der iranischen Philologie* (Strassburg, 1900). Consult also: Lukas, *Grundbegriffe in der Kosmogonie der alten Völker* (Leipzig, 1893); Jensen, *Kosmologie der Babylonier* (Strassburg, 1890); Meyer, *Eddische Kosmogonie* (Freiburg, 1891); Faye, *Sur l'origine du monde . . . théories cosmogoniques des anciens et des modernes* (2d ed., Paris, 1885); Plunket, *Ancient Calendars and Constellations* (London, 1903); Chamberlin, "Fundamental Problems in Geology," in *Year Book No. 3 of the Carnegie Institution*; Clerke, *Modern Cosmogonies* (London, 1905); La-grange, *Études sur les religions sémitiques* (Paris, 1905); Moulton, "On the Evolution of the Solar System," in *Astrophysical Journal* for October, 1905; Hale, *Study of Stellar Evolution* (Chicago, 1908); Lowell, *The Evolution of Worlds* (New York, 1910).

COSMOPOLIS (from Gk. *kósmos*, *kosmos*, order, world, universe + *pólis*, *polis*, city). A French novel by Paul Bourget (1892). The characters come to Paris from all quarters of the earth, forming an international society. The theme of the action is the persistence of ethnical differences even where a complete cosmopolitanism has apparently been reached.

COSMOPOLITE (Gk. *κοσμοπολίτης*, *kosmopolitês*, citizen of the world, from *kósmos*, *kosmos*, order, world, universe + *πολίτης*, *politês*, citizen, from *pólis*, *polis*, city). A plant which grows spontaneously in every climate. Not to be confused with ubiquist (q.v.).

COSMORAMA, *kôz'mô-râ'mâ* (from Gk. *kósmos*, *kosmos*, order, world, universe + *δράμα*, *hōrama*, sight, from *ὁράω*, *horan*, to see). An arrangement of lenses and mirrors for viewing pictures, so that they appear as natural as possible. The name was applied to exhibitions where representations of landscapes, buildings, and other features of places in different parts of the world could be seen. By properly arranging the lenses, mirrors, and illumination, the pictures were produced not only enlarged, but with the effect of perspective. Cosmoramas were first introduced in France at the beginning of the nineteenth century.

COSMOS (Neo-Lat., from Gk. *kósmos*, *kosmos*, order, world, universe). A genus of annual and perennial herbs of the family Compositae. The 20 or so species comprised in this genus are natives of tropical America, mostly Mexico. A few annual species are cultivated in flower gardens and have within recent years come into increased prominence and popularity, especially in the United States. (For illustration, see Plate of CRANBERRY, ETC.) The plants branch freely and are sometimes 10 feet high, leaves pinnately cut, flowers mostly rose, crimson,

purple, yellow, or white; generally solitary on a long peduncle. A sandy soil not too rich is preferred. The seeds are sown indoors, and the plants when large enough are set in the garden, after danger of frost is past. *Cosmos bipinnatus* and *Cosmos sulphureus* are the species most commonly grown. The former grows 7 to 10 feet high, blooms in the late fall, and has many different forms. A dwarf variety about 4½ feet high blooms in July. *Cosmos sulphureus* grows 2½ to 4 feet high, with sulphur or rich orange-yellow flowers 1 to 3¼ inches in diameter. It comes into blossom in some of the more southern States in late spring and continues to bloom without cessation until killed by fall frosts. The black cosmos (*Cosmos ducisfolius*) is a tender annual, growing only 12 to 16 inches high.

COSMOS. A great scientific work in four volumes, by Alexander von Humboldt, which appeared at intervals from 1845 to 1858. It is a physical description of the universe, setting forth physical laws in logical order, though modern science shows it faulty in some of its matter.

COSQUIN, kó'skân', EMMANUEL (1841-). A French writer on folklore. He was born at Vitry-le-François, Marne. In his *Contes populaires de Lorraine* (1887) he follows Benfey in an attempt to show that the folklore of Europe has been derived from India. He also wrote on ecclesiastical subjects, chiefly for the paper *Le Français*, and translated into French the works of Joseph Fessler (q.v.) on papal infallibility (1873) and the Vatican Council (1877).

COSS. See ALGEBRA.

COS'SA, FRANCESCO (c.1435-c.77). An Italian painter of the Renaissance. He was a pupil of Tura of Ferrara and was also influenced by Piero della Francesca, worked at Ferrara and Bologna, and is considered, with Ercole Roberti, to have been the founder of the Bolognese school. He and his contemporary, Cosimo Tura, are the most important representatives of Ferrarese art. In the Palazzo Schifanoia at Ferrara there is a curious fresco by him, "The Glorification of March, April, and May," the other months having been done by lesser artists. In this composition there are a number of portraits of his contemporaries, remarkable for their fidelity to nature and for the valuable studies of costume. Indignant at the slight compensation he received from Duke Borso d'Este, he left Ferrara and settled at Bologna. Among his finest works are a Madonna in the Pinacoteca, Bologna; a Madonna in the Johnston collection, Philadelphia (attributed to Tura), and "Autumn" in the Berlin Museum. A distinguishing characteristic of his art is his command of movement and of line. Consult Berenson, *North Italian Painters of the Renaissance* (New York, 1907).

COSSA, LUIGI (1831-96). An Italian economist. He was born in Milan, studied at the universities of Pavia, Vienna, and Leipzig, and in 1858 was appointed professor of political economy in Pavia. His most important work is the *Primi elementi di economia politica* (8th ed., 1889), which has been translated into English and several other languages. Among his other publications may be mentioned: *Scienza della finanze* (1875; Eng. trans., 1888, under title *Taxation, its Principles and Methods*); *Guida allo studio dell' economia politica* (1876;

Eng. trans., 1880); and *Saggi di economia politica* (1878).

COSSA, PIETRO (1830-81). An Italian romantic dramatist, born in Rome. He fought in the campaign of 1849, going thereafter into brief exile in South America. His first dramatic success was the *Nerone* (1870), followed by *Plauto e il suo secolo* (1876), *Messalina* (1876), *Cleopatra*, and other plays of classic subject matter. In his best work Cossa frees the classic drama from Alferian imitation and the aridity of the classic tradition, attaining great excellence of historical coloring, reducing his characters from abstractions to concrete vital human beings, combining beauty of lyric movement with delicate humor, sound psychology, and realistic truth. Consult: Mazzoni, *L'Ottocento* (Milan); Franchetti, in *Nuova Antologia* (1881); *Works* (Turin, 1887).

COS'SACK ASPARAGUS. See TYPHA.

COSSACK POSTS. The name of an observation group of four men sent out from the support of an outpost. The *cossock post* is now included in the general term *outguards*, which vary in size from four men to a platoon. Consult *Field Service Regulations, U. S. A.* (1913). Each post consists of four men—three reliefs of one sentinel each and a non-commissioned officer as commander, or, failing such, an old and experienced soldier. They are a substitute for the usual line of pickets and sentinels. They are sufficient in number to cover the front of the support and to connect with the outguards of adjoining supports. The interval between posts and their distances from the support depends upon the situation and terrain. The sentinels are seldom posted more than 30 to 40 yards in front of the Cossack posts and are kept under constant observation by the other members of their post. They are relieved every hour, and the posts every three hours. The advantages claimed for the Cossack system are that it is more economical in point of men required than is the usual method and is besides less fatiguing and consequently more effective, and that, above all else, it enables the sentries to be more resolute in the performance of their duties, because, backed up by the nearness of their post, they are freed from any timidity of loneliness. See OUTPOST.

COSSACKS (Russ. *kozákí, kazákí*, from Turk. *kazák*, robber; the same word in Tatar designating a light-armed warrior). A name borne by a people living under a peculiar military organization, who for several centuries have constituted an important element in the population of southern Russia. Their principal homes are the steppes of the Don and of Ciscaucasia and a region at the southern end of the Ural Mountains, on the borders of European Russia and Siberia. They are a mixed race, of Russian, Polish, Tatar, and other elements, with the Russian predominating. In fact, they are distinguished from the other Russians by their unsettled mode of life rather than by any difference of race or fundamental character. The Cossacks make their appearance in history about the close of the Middle Ages as a frontier people, on the border of Slavdom (Russia and Poland) on the one hand and the Tatar regions to the southeast on the other. A free, wild people, accustomed to live in the saddle and in constant warfare, they acquired by inheritance the qualities of courage, endurance, self-reliance, and good horsemanship which gave them high

rank among the irregular cavalry of the world. Long unaccustomed to the restraints of civilized government, they distinguished themselves by their predatory habits. The Don Cossacks, who at the present time constitute the principal body of the Cossacks, became powerful about the close of the sixteenth century. The town of Teherkask became the seat of their government. At the head of their democratic organization was the Ataman (Hetman). In 1773 the Don Cossacks joined the pretender Pugatcheff against Catharine II, for which they were deprived of all of their liberties and their democratic institutions. Yermak Timofeyeff, a Don Cossack, belonging to a lawless band, the Good Companions of the Don, entered the service of the Stroganoffs, a wealthy family living in the Ural region and holding special trading privileges, crossed the Urals with a few hundred followers in 1581, and in a few years conquered and brought into a rude kind of subjection all of western Siberia. From this time the history of the Cossacks is closely connected with that of the Russian progress eastward through Siberia. With wonderful persistence and endurance, and a spirit of enterprise that would have been impossible in the stolid Russian village peasant, they explored and subdued this vast addition to Russia's territory. The Malorussian (Little Russian) Cossacks, or Cossacks of the Ukraine (Border Land), were organized in the second half of the sixteenth century by Stephen Báthory, King of Poland, into a defensive bulwark on the southeastern frontiers of the realm. In the middle of the seventeenth century, harassed by Polish oppression, they revolted under the lead of their Ataman, Chmielnicki (q.v.), and placed themselves under the protection of Russia. Under the lead of Mazepa they joined Charles XII against Peter the Great, whose victory at Poltava sealed their fate. Their liberties were abolished, and they were treated with great harshness. The Zaporogian Cossacks (Russ. *Zaporog*, beyond the rapids), on the Dneiper, were one of the most notable of the tribes down to the middle of the seventeenth century, when they submitted to Russia. Their predatory incursions were not confined to the land, but included naval expeditions against the Turkish towns of Asia Minor. Among their peculiar tribal institutions was the celibacy imposed upon the ruling class.

The Cossacks are regarded by the Russian government as a military division of the population. They are organized in 11 *voiskos*, or *corps* (Don, Kuban, Terek, Astrakhan, Orenburg, Ural, Siberia, Semiryetchensk, Transbaikalia, Amur, Ussuri). Their military training begins in boyhood, compulsory service in the *stamta*, or Cossack post, begins at 18; field service begins at 20, 12 years being spent in active service and five years in the reserve. This service is divided into three classes—active, on furlough with arms and horses, and on furlough with arms but without horses. Each *voisko* equips and clothes its soldiers and receives an allowance of land from the crown. The Cossacks wear a distinctive uniform of dark green. Part of them, in addition to other arms, still carry a long lance. The Kuban *voisko* enrolls six battalions of Cossack infantry, and there are also 15 batteries (44 on a war footing) of Cossack field artillery. The title of Ataman, or chief of the Cossacks, is now vested in the Imperial family. The Cossacks probably num-

ber nearly 3,000,000, and it is estimated that over 300,000 could take the field within a comparatively short space of time. The Cossack regiments are armed with a short magazine rifle of 0.299 inch calibre, sighted to 3000 paces. Every cossack up to any age can be called out in time of emergency to assist in the national defense. Consult Erckert, *Der Ursprung der Kosaken* (Berlin, 1882), and Tettau, *Die Kosakenheere* (ib., 1892). A realistic picture of Cossack life may be found in Gogol's celebrated novel *Taras Bulba*.

COSSACKS, THE. A novel by Count Tolstoy (1852). It was translated into English in 1878.

COSSON, kô'sôn', ERNEST (1819-89). A French botanist, born in Paris. He carried on extensive botanical studies in Algeria and explored the flora in the suburbs of Paris. His published works include the following: *Flore descriptive et analytique des environs de Paris*, jointly with Saint-Pierre (1845); *Synopsis analytique de la flore des environs de Paris* (1845); *Atlas de la flore des environs de Paris* (1882); *Compendium Floræ Atlanticæ, ou Flore des états barbaresques: Algérie, Tunisie, Maroc* (1881-87); *Cospectus Floræ Atlanticæ* (1881); *Illustrationes Floræ Atlanticæ* (1883-92).

COSSUTTIUS, kôs-sû'shi-ûs. A Roman architect noted for his selection by King Antiochus Epiphanes (175-164 B.C.) to rebuild the great temple of the Olympian Zeus at Athens in the Corinthian style. He did not live to complete the temple, which was finished by Hadrian in the early second century A.D.

COST. See **COTISE.**

COSTA, kô'sta, ALFONSO AUGUSTO DE (1871-1915). A Portuguese statesman, born in Ceia, Guarda, Portugal. He studied at Coimbra, receiving his doctor's degree in 1895, and in the following year became professor of law. Known as an eloquent speaker, he affiliated himself with the Republican party and was elected by a great majority deputy to the Cortes, in spite of the machinations of government agents (Nov. 26, 1899). The ministry annulled his election on a futile pretext, but in the new elections, on Feb. 18, 1900, he was again triumphantly elected. In the Cortes he was received as a recognized enemy of the monarchical régime, and he soon gave more than ample proof of his enmity by introducing, amid great protest, a resolution in the Cortes in which he proposed the abolition of the monarchy. After the fall of the ministry he failed to be reelected, but threw himself enthusiastically into the preparations for the revolution which resulted in 1910 in establishing the Republic. Under the new régime he became Minister of Justice, and in January, 1913, Minister of Finance and Premier. The exiled Royalists in July, 1913, made an attempt on his life, but he escaped with slight injuries; another plot to kill him in September, 1913, was also frustrated. Dr. Costa, more than any other one man, typifies the spirit of the new Republic of Portugal. His publications include: *A Egreje e a questão social*; *O serviço de peritos no processo criminal: legislação portuguesa, critica e reforma*; *Direito civil* (1896); *Economia política* (1896-98); *Organização judiciária* (1897-1901).

COSTA, kô'sta, CLAUDIO MANUEL DA (1929-90). A Brazilian poet, statesman, and jurist-consult. He was born at Mariano (Province

of Minas Geraes). He studied law at the University of Coimbra, and on his return to Brazil in 1751 devoted himself to his profession and to political economy. From 1780 to 1788 he was second Secretary of State. His works, which are numerous, are highly valued by the Portuguese, who consider them classics. The best of them is *Villarica*, composed about 1773, but not published until 1841.

COSTA, ISAAC DA. See **DA COSTA, ISAAC.**

COSTA, LORENZO (1460-1535). An Italian painter of the Renaissance. He was a pupil of Cosimo Tura in his birthplace, Ferrara, and was influenced at first by Ercole Roberti and Francesco Cossa. Of his supposed early paintings only the St. Sebastian (Dresden Museum) is authentic. In 1483 he went to Bologna, where he remained almost constantly until the fall of his patrons, the Bentivoglio family, in 1506, and there he began his connection with Francia. The artists had a joint school and worked as copainters. Costa first influenced Francia, and was in turn influenced by him. His landscape backgrounds are among the best of his day. He was a master of linear composition, and in his best pictures the color is clear and refulgent, the figures dignified, and the whole effect pleasing. Among his best paintings in Bolognese churches are: "A Madonna with Members of the Bentivoglio Family" (1488) in San Giacomo Maggiore, a characteristic example, admirable in its fresh, simple, sincere treatment and masterly drawing, "The Triumph of Life and Death," in the same church, a Madonna (1497), in San Giovanni in Monti; a "Santa Conversation," in San Petronio; and frescoes in the Misericordia and Santa Cecilia. After leaving Bologna he was appointed court painter in Mantua, where his chief work was the decoration of Palazzo San Sebastiano. Other works include "Isabella d'Este Crowned by the Muse" (Louvre) and the "Dead Christ" (1504, Berlin Museum). Costa played an important part in the history of the schools of Bologna and Ferrara. The young Correggio, who accompanied him to Mantua, was his principal pupil.

Consult: Morelli, *Italian Painters: Critical Studies of their Works*, translated by Constance Jocelyn Ffoulkes (London, 1892-93); Berenson, *North Italian Painters of the Renaissance* (New York, 1907); Gardner, *The Painters of Ferrara* (London, 1911).

COSTA, SIR MICHAEL, really **MICHELE** (1808-84). An Italian composer and conductor, born in Naples. He was taught by his father and Zingarelli (q.v.). When the latter's psalm was to be performed at the Birmingham Festival (1828), he sent Costa, then only 18 years old, to conduct it. Owing to a misunderstanding, Costa had, instead, to sing the tenor part, but acquitted himself of the task brilliantly, and his reception induced him to settle in England. He became conductor of Italian opera in 1830 and in 1847 assumed the same post in the Covent Garden Opera. In addition he was appointed conductor of the Philharmonic Society (1846), Sacred Harmonic Society (1848), Birmingham Festivals (1849), and Handel Festivals (1857). His principal work, the oratorio *Eli*, was successfully produced at the Birmingham Festival of 1855 and *Naaman* in 1864. In 1869 he was knighted by Queen Victoria and also received the royal order of Frederick from the King of Württemberg. Costa wrote several

ballets and operas, of which the most successful were *Don Carlos* and *Malek Adel*. He died at Brighton, England.

COSTA, PAOLO (1771-1836). An Italian author, born in Ravenna, educated at Padua, and a teacher successively at Treviso, Bologna, and Corfu. He published a commentary on Dante, a revision of the Dictionary of the Crusca, and translations of the *Batrachomyomachia* and of Schiller's *Don Carlos*. Works (Florence, 1839-40); biography by Mordani (Forlì, 1840).

COSTA CABRAL, kô'stá ká-brál', ANTONIO BERNARDO DA, COUNT DE THOMAR (1803-89). A Portuguese statesman. He became judge of the Supreme Court in Oporto and in Lisbon, and in 1835 was elected to the Chamber of Deputies, where at first he was one of the leaders of the Radicals, but soon joined the Conservative party. He was appointed Governor of Lisbon in 1838 and Minister of Justice in 1839. For the purpose of setting aside the constitution of 1820 with its restrictions of the royal power, he fomented, in 1842, an insurrection in Oporto, assumed control of the army, established a censorship of the public schools, suppressed the universities, and so oppressed the people with taxes that he was driven from power in 1846. Once more appointed Prime Minister, in 1849, he again played the dictator, to the detriment especially of the state finances, but was compelled to resign. The Queen refused to accept his resignation, and a revolution was started against him under the leadership of Saldanha, which overthrew his administration in April, 1851. He fled to England, but returned the next year, and from 1859 to 1861 was Ambassador to Brazil. In 1862 he became a member of the Council of State and president of the Superior Administrative Court.

COSTANOAN. A linguistic family of Indians, formerly occupying territory north of San Francisco Bay. In 1910 there were but 17 passing under the name "Santa Cruz."

COSTA RICA, kô'stá rê'ká (Sp., rich coast). The most southern of the Central American States, bounded by Nicaragua on the north, the Caribbean Sea on the east, Panama on the southeast, and the Pacific on the southwest (Map: Central America, E 5). Its area is estimated at 18,700 square miles. Lake Nicaragua forms part of the northern boundary.

Topography. The interior of the country is taken up partly by the Talamancan Range of mountains (a continuation of the Cordillera of Chiriquí), which runs from the southeast to the northwest as far as lat. 10° N. The Talamancan is of volcanic origin and reaches in its highest peaks an altitude of over 12,700 feet. North of the Cartago highland commences the second mountain range, which extends in the same (northwesterly) direction to the northern boundary of the Republic. There are several volcanoes in this range. Of them, however, but two—the Irazú (11,500 feet) and Turrialba (11,350 feet)—show any signs of activity. Since 1841, when the town of Cartago was almost completely destroyed, no serious eruption has occurred. Earthquakes are of frequent occurrence. The last serious shock occurred in 1910, when the Peace Palace and other buildings at Cartago were destroyed, and 1000 lives were lost. The Atlantic coast, which, according to the adjustment of the southern boundary in 1900, reaches only to a point a little north of the mouth of the river Teliri or Sixola, is gen-

erally low, and, with the exception of Port Limón, without any inlet. The Pacific coast, on the contrary, has a more elevated surface and forms the two spacious gulfs of Nicoya and Dulce, which are protected by two mountainous peninsulas. There are a number of smaller inlets in the northern part. The rivers of Costa Rica are short and, although abundant in water, unnavigable. Most of them flow into the Atlantic or the Pacific, while some join the San Juan, which forms the eastern half of the northern boundary.

Geology. The interior highland region is composed of Paleozoic and Mesozoic strata, in places broken through by ancient eruptives and overlain by more recent lava flows. Many districts are known to be mineralized; the deposits of gold are especially important and have attracted the attention of foreign capitalists, who are now engaged in developing this branch of the mining industry. The east coast of Costa Rica is an alluvial plain.

Climate. In regard to its climate Costa Rica may be divided into three zones. The torrid zone, below 3000 feet, comprising the coast lands, has an average temperature ranging from 72° to 82° F. The temperate zone, lying between 3000 and 7500 feet, has the most salubrious climate and a mean temperature ranging from 57° to 68° F. Above 7500 feet the temperature is much lower, and frosts are frequent, but snows rare. On the table-lands of San José, lying at an elevation of 3000 to 4000 feet, the climate is very agreeable, the temperature having a range of only about 5°, the mean for the year being 67° F. The average yearly rainfall is about 100 inches, but occasionally it reaches 130 inches. The dry season lasts from December to May, while the months of December, January, and February are the coldest of the year. Owing to the proximity of the two oceans, winds blow almost continually and occasion considerable discomfort during the dry season. On the whole, the climate of Costa Rica is healthful and fevers occur only in regions below an elevation of 150 feet.

Flora. The vegetation of Costa Rica is characteristically tropical in its nature. In the forests are found mahogany, brazilwood, cedar, evergreen oak, and ebony. Coffee and banana are the principal cultivated plants.

Fauna. Animal life is abundant and varied. The tapir and other South American animals are found. Bird life is represented by about 700 species, including parrots, toucans, humming birds, and members of the gallinaceous family. There are over 130 species of reptiles and batrachians. The most important life in the surrounding waters are the pearl and mother-of-pearl oysters.

Agriculture. Costa Rica is essentially an agricultural country and is chiefly dependent on the cultivation of coffee and bananas. Notwithstanding the sparse population of the country and the lack of transportation facilities, agriculture is in a flourishing condition, as evidenced by the constantly increasing exports of agricultural products. This is due partly to the fertility of the soil and favorable climatic conditions, and partly to the fact that more than two-thirds of the inhabitants belong to a class of peasant proprietors. The state domain is sold or leased on advantageous terms in lots of not over 500 hectares. The presence of so large a proportion of working landowners makes

not only for the development of agriculture but for the political stability of the country. Coffee cultivation was retarded during the first decade of the century by the prevailing low prices. In 1894 the export amounted to 23,129,000 pounds; it increased to over 43,000,000 in 1898, decreased to about 24,000,000 in 1904, advanced to about 35,000,000 pounds in 1905, and in 1911 was 27,150,000 pounds. This latter figure represents the approximate annual export from 1909 to 1912. Banana growing has developed rapidly, chiefly under American management; over three-fourths of the export goes to the United States. In 1881 about 3500 bunches were exported; by 1890 the exports had increased to 1,034,765 bunches, while in 1905 they amounted to 7,283,000, in 1910 to 9,097,285, and in 1912 to 10,647,702 bunches. Besides coffee and bananas, there are raised sugar, cacao, rice, corn, and beans, but none of them is exported to any extent. Stock raising, though relatively unimportant, is developing. The forests are exploited on a steadily increasing scale.

Mining and Manufactures. The precious metals, particularly gold, are mined to some extent, principally with the aid of American capital. Their export, which was valued at about \$283,000 in 1905, increased to over \$1,184,000 in 1911 and then declined to about \$764,000 in 1912. Of manufacturing establishments Costa Rica has very few, the largest being the national liquor factory and the national foundry at San José.

Transportation and Communication. The transcontinental railway connects the Caribbean port Limón with the Pacific port Puntarenas, by way of San José. There are branches to the north and the south of the main line, and these it is planned to extend to various parts of the country and ultimately to connect with railways in Nicaragua and Panama. The railways aggregate over 430 miles. There are over 130 telegraph offices, with upward of 1520 miles of wire.

Commerce. The chief ports are Limón and Puntarenas. In 1912 there entered at the former 538 vessels, of 1,129,606 tons, and at the latter 87 vessels, of 178,904 tons. Imports increased from \$6,175,637 in 1909 to \$10,187,686 in 1912, and exports from \$8,264,174 to \$10,071,144. Of the imports in 1912, the value of \$5,865,908 represented the United States, \$1,503,944 Germany, and \$1,391,003 the United Kingdom. The coffee export in 1912 was valued at about \$4,950,000, about five-sixths of it going to the United Kingdom; the banana export, about \$3,503,000, over three-fourths to the United States. Other exports are gold bars, woods, hides, rubber, and cacao. About 46 per cent of the imports are drawn from the United States, and about 55 per cent of the exports are to that country. Costa Rica is economically one of the more promising Latin-American countries. Its favorable climate and soil and its comparative freedom from political disturbances have attracted foreign capital.

Government. In its form of government Costa Rica is a republic. It is governed under a constitution adopted in 1871; but this did not come into force until 1882, and it has been repeatedly modified. The executive power is vested in the president, elected indirectly for four years; he is ineligible for the next succeeding term. He is assisted by a cabinet of four members. The congress consists of a

single chamber of 43 representatives elected indirectly for four years. For administrative purposes the republic is divided into seven provinces, administered by governors appointed by the president. Justice is administered by a supreme court, two courts of appeals, a court of cassation, and also provincial courts. Capital punishment is prohibited. The constitution provides for compulsory military service in time of war. On a peace footing the standing army has a maximum strength of 1000 men and the militia about 5000. See **ARMIES AND NAVIES**. For national colors see **Colored Plate of FLAGS**.

Finance. The standard of value is gold, the monetary unit, the *colón*, par value 46.536 cents. The budget for 1914 showed estimated revenue of 9,200,000 colones and estimated expenditure of 9,013,635 colones. The estimated receipts from customs were 5,500,000 and from liquor excise 2,200,000 colones. Public debt, as converted at the end of 1911: foreign, £1,617,200; internal, \$6,553,950. The metric system is legally established in the country, but Spanish weights and measures are generally used.

Banks. There are 5 banks in Costa Rica, with a combined capital of 6,365,000 colones. At the end of 1911 notes in circulation amounted to 4,097,405 colones. Foreign gold is legal, but not foreign silver.

Population. Although there are many mixed bloods in Costa Rica, the percentage of Spanish blood is greater than in the other Central American republics. The majority of the inhabitants claim descent from the Spanish colonists, chiefly Galicians, who arrived in the sixteenth century and subsequently. Through the industry and peaceful disposition of the people, Costa Rica presents a favorable contrast to the rest of Central and much of South America. The population in 1904 was reported at 331,340. The enumeration of Dec. 31, 1911, showed 388,266 inhabitants, but it was not complete, several districts being omitted. The largest town is the capital, San José (31,688). In 1910 and 1911 immigrants numbered 11,233 and 9537; emigrants, 7236 and 8170; births, 15,847 and 16,839; deaths, 9723 and 9483.

Elementary instruction is free and compulsory, but the majority of the inhabitants are still illiterate. In 1911 about 30,000 pupils were enrolled in the elementary schools. There are several institutions for secondary and professional education. The Roman Catholic church is recognized and supported by the state, but other religions are tolerated.

History. Costa Rica was first visited, and probably named, by Columbus in 1502 and settled permanently about 1530. It formed a part of the audiencia and captaincy-general of Guatemala till 1821. With other Central American States, Costa Rica was a part of Mexico till 1823, when the proclamation of a Mexican republic caused them to withdraw from a connection which had always been distasteful and which in effect had been merely nominal. A federal republic of the seceding states was first tried. It lasted until 1839, but its authority does not seem to have extended over the Costa Ricans, who busied themselves with commerce and took little interest in public matters. Affairs remained in an unsettled condition, however, and Costa Rica's exact status was not definitely determined until 1848, when she successfully declared herself an independent republic.

In 1856 Costa Rica was involved in war against the filibuster William Walker (q.v.). The country has been freer from revolution than its neighbors. The present constitution dates from 1871. In 1897 Costa Rica became a member of the short-lived Greater Republic of Central America, established in 1895 by Honduras, Nicaragua, and Salvador for the purpose of common defense and the harmonious adjustment of foreign relations. Since then nothing more serious than boundary disputes has disturbed the government of Costa Rica. The most important of these, with Colombia, was adjusted in 1900, in favor of Costa Rica, by the award of President Loubet of France. But as Loubet in making that award had been guilty of extralimitation, the award was rejected, and after many attempts to reach a settlement (made somewhat more complicated by the fact that Panama had become independent and had to be dealt with instead of Colombia), the whole matter was again submitted to arbitration, with the Chief Justice of the United States Supreme Court as arbitrator, by a protocol signed at Washington March 17, 1910. Besides the general works on Central America, of which Squier, *States of Central America* (New York, 1858), is the best, and Bancroft, *Central America*, vol. iii (San Francisco, 1890), is the most copious, consult the English translation of Calvo, *Republic of Costa Rica* (Chicago, 1890). This is a popular and patriotic work, authorized by the Costa Rican Government, and gives the version of political and commercial events most acceptable to the men in power in 1890.

Consult: Barrantes, *Geografía de Costa Rica* (Barcelona, 1892); Villafranca, *Costa Rica, the Gem of American Republics: The Land, its Resources and its People* (New York, 1895); Biolley, *Costa Rica and her Future* (Washington, 1889); Schroeder, *Costa Rica State Immigration* (San José, 1894); *Revista de Costa Rica, en el Siglo XIX* (ib., 1902); Barrantes, *Elementos de Historia de Costa Rica* (ib., 1892). For detailed bibliography, consult D. J. Maluquer, *República de Costa Rica* (Madrid, 1890). Maps are published by the Bureau of American Republics (Washington, 1903), and the Royal Geographical Society (London, 1897), the latter being physical.

COSTE, kôst, JEAN VICTOR (1807-73). A French naturalist, noted for researches in embryology and for efforts towards the cultivation of fishes in his country. In 1841 he became professor of embryogeny at the Collège de France. Mainly through his influence 600,000 salmon and trout were placed in the Rhône. In 1862 he was appointed inspector general of the river and coast fisheries. He published: *Cours d'embryogénie comparée* (1837); *Instructions pratiques sur la pisciculture* (1853); *Ovologie du Kangaroo* (1838); *Histoire générale et particulière du développement des corps organisés* (1847-59); *Voyage d'exploration sur le littoral de la France et de l'Italie* (1855).

COSTEANING (kôs-tên'ing) **DITCH** (from *costean*, from Corn. *cothas*, dropped + *steann*, tin, Welsh, *ystaen*, Gael. *staon*, Manx *stainny*, Lat. *stannum*, tin). A ditch dug through the surface soil to bed rock, at right angles to the strike of the formation, for the purpose of prospecting for or locating the outcrop of the continuation of a mineral deposit, the presence of which is suspected. In the United States,

this method is known as *trenching*. In the Cobalt District of Ontario many miles of such trenches were dug in prospecting for silver veins in the ore-bearing formation. The same method was adopted in the Porcupine District of Ontario in the search for gold veins. It is the usual method followed in preliminary prospecting when the presence of mineral is suspected or known from surface float, and the overlying soil is not too deep.

COSTELLO, LOUISA STUART (1799-1870). An English author and miniature painter. For a time she occupied herself entirely with painting miniatures and copying illuminated manuscripts, but having attracted the attention of Scott and Moore, she adopted literature as her profession and produced many works that attained popularity. Some of them are: *Songs of a Stranger* (1825); *The Maid of the Cypress Isle and Other Poems* (1815); *Specimens of the Early Poetry of France* (1835); *The Rose Garden of Persia* (1845), with illuminations by herself and her brother Dudley; and a number of semihistorical novels, of which the most prominent is *Memoirs of Mary, the Young Duchess of Burgundy* (1853).

COSTER, kō'stēr, LOURENS JANSZON. A native of Haarlem, Holland, reputed inventor of printing (about 1440). He is said to have printed sentences from beech-bark blocks, to have discovered a suitable ink, and to have substituted types of lead and later of pewter for beech wood. As he is alleged to have endeavored to counterfeit manuscript, he is supposed to have worked in secret, but to have taken apprentices, one of whom, Johann Gansfleisch, a member of the Gutenberg family, is said in 1441 after Coster's death to have stolen types and matrices and fled to Mainz, where he might have revealed the secret to Gutenberg (q.v.). Coster's claim, vigorously maintained by many Dutch scholars, was disproved by Van der Linde (1870), who showed that Coster was a tallow chandler and tavern keeper, that he was confused with Lourens Janszoon, a wine merchant and town officer, and that the claim for him as inventor was first made by Gerrit Thomaszoon in 1550. Consult Morley, *English Writers*, vol. vi (London, 1890), also Wysz, *Zentralblatt für Bibliotheksvesen* (1888).

COSTER, SAMUEL. See KOSTER, SAMUEL.

COSTIGAN, CAPTAIN. A retired shabby-genteel Irish officer in Thackeray's *Pendennis*.

COSTIGAN, JOHN (1835-1916). A Canadian statesman. He was born at St. Nicholas, Quebec Province, and was educated at St. Anne's College. He became a judge of the Inferior Common Pleas Court, was in 1861-66 a Conservative member of the New Brunswick Legislature, and after confederation in 1867 was elected to the Dominion House of Commons, of which he remained a member until 1896. During the earlier part of his parliamentary career he took a prominent part in amending the school law of New Brunswick, which contained a provision obnoxious to Roman Catholics. In 1882-92 he was Minister of Inland Revenue, from 1892 to 1894 was Secretary of State, and in 1894-96 was Minister of Marine and Fisheries. In 1882 he procured the adoption by the House of Commons of a notable series of resolutions praying the British government to concede home rule to Ireland. The resolutions were politely disregarded in London. In 1896 he was a delegate to the National Convention, Dublin, in the interest of

Irish home rule. In the same year he left the Conservative party and became a supporter of the Laurier administration. In 1907 he was appointed to the Dominion Senate.

COSTMARY (from *cost*, Lat. *costum*, an Oriental aromatic plant, from Gk. *kōros*, *kostos*, spice root + *-mary*, Fr. *marine*, Lat. *marinus*, pertaining to the sea, from *marc*, sea, but confused by popular etymology with *Mary*). The rayless form of *Chrysanthemum balsamita*, a perennial plant of the family Compositæ, a native of western Asia, long cultivated in gardens for the agreeable fragrance of the leaves. The root leaves are ovate, of a grayish color, on long footstalks: the stem is 2 to 3 feet high; it has small heads of deep yellow flowers in loose corymbs.

COSTS (from *cost*, OF. *cofter*, *couster*, Fr. *coûter*, ML. *costare*, to cost, from Lat. *constare*, to cost, stand together, from *com*, together + *stare*, Gk. *istēnai*, *histēnai*, Skt. *sthā*, to stand). In a litigated case, the sum of money which the successful party is allowed to recover from his opponent, as a partial compensation for the expenses of the litigation. In actions at common law costs are the creation of statute, but in equity and admiralty suits they are fixed by the court, except where this power has been taken away or modified by legislation. Even in common-law actions discretion is often vested in the court to grant an allowance to the prevailing party in addition to the ordinary costs, and in some jurisdictions paupers and seamen may be relieved from costs altogether.

Costs are either (a) *interlocutory*, i.e., such as are awarded upon motions or similar proceedings during the pendency of the action, or (b) *final*, i.e., such as follow upon the determination of the action. Upon the decision of a motion, or upon a judgment on appeal reversing the judgment appealed from and awarding a new trial, costs are often ordered to *abide the event*. In such a case, if the final judgment is in favor of the party who succeeded on the motion or appeal, he gets his costs of those proceedings, otherwise he loses them.

The *taxation of costs* is the official adjustment, on notice, of the various items to which the successful party is entitled. For details relating to costs, consult the authorities referred to under PRACTICE.

COSTUME (Fr. *costume*, from It. *costume*, from ML. *costuma*, from Lat. *consuetudinem*, custom or habit).

Costume is dress (q.v.) regarded from the point of view of style, the distinctive garments worn at different periods by different human groups, and including not only gowns, shirts, drawers, coats, vests, trousers, petticoats, skirts, hoop skirts, waists, corsets, stockings, hats, boots, shoes, collars, belts, fans, garters, gloves, but also jewelry, modes of dressing the hair and beard, military and naval uniforms, ecclesiastical vestments, university robes, armor and coats of arms. See HERALDRY, ARMOR, COSTUME, ECCLESIASTICAL; HAIR DRESSING; BEARD; UNIFORMS, MILITARY AND NAVAL; JEWELRY; DRESS; FASHION; CROWN, CORONET; UMBRELLA; PARASOL; SHOES; CORSET; CRINOLINE; TATTOOING; ETC.

Once it was the generally accepted opinion that the primary object of clothing is to conceal nakedness and satisfy innate feelings of modesty. This view was perhaps based to some extent on the third chapter of Genesis, where,

after Adam and Eve ate of the fruit, "the eyes of them both were opened, and they knew they were naked; and they sewed fig leaves together and made themselves aprons . . . and hid themselves from the presence of the Lord God amongst the trees in the garden." During the past few years, however, anthropologists have accumulated and arranged facts about primitive peoples which, in the works of Westermarck, "appear to prove that the feeling of shame, far from being the cause of man's covering his body, is, on the contrary, the result of it; and that the covering . . . owes its origin, at least in a great many cases, to the desire of men and women to make themselves mutually attractive.

Certainly, when we turn from primitive to modern civilized humans, it is obvious that the primary object of costume, which is merely clothing that has style, is to increase the attractiveness of the individual or class of individuals and to enhance the curiosity and desire of the sexes for each other by exaggerating the difference between them and the mystery of it. Structurally as well as decoratively the difference between "pants and petticoats," "trousers and skirts," is fundamental—so thoroughly fundamental that when women "wear the trousers" we are said to have "petticoat government."

Climatically, clothing may be divided into two classes (with apologies to Dr. Stratz)—one tropical, based on skirts; the other arctic, based on trousers—both developed from the girdle or waist cloth. In the arctic regions both men and women wear trousers, in the tropics both wear skirts; while in between, the men adhere to the arctic costume, the women to the tropical one, apparently because most of the women lead an inactive and house-sheltered life, while the men are active out-of-doors. It is noteworthy that when women work as laborers they are apt to don trousers, e.g., in the Belgian mines or the Swiss fields. The ancient Greeks and Romans were much impressed by the fact that the barbarians to the north wore trousers. Cicero speaks of the Transalpine tribes as the "panted people" (*nationes braccatæ*), while Pliny's term for what was afterward called *Gallia Narbonensis*, is *Gallia braccata* (Breeches Gaul). However, it will not do to push the geographical division too far, for trousers were the national costume not only of the peoples to the north of the Greeks and Romans—Gauls, Belgians, Franks, Britons, Germans, Scythians—but also of those to the east—Medes, Persians, and Parthians, as well as Armenians and Phrygians.

To judge from the artistic remains of ancient Egypt and Assyria, the use of rich stuffs was the primary thought of those Egyptians who sought to be splendid in appearance. Beauty of material and of pattern at least held an even place in their minds with jewelry. Thus, from the earliest era known to us by the painted monuments down to a period later than the Macedonian conquest, the little-changing adornment of the Egyptian official or court lady was something very magnificent indeed, in the way of broad necklaces made up apparently of ring within ring of carved gems, mounted in gold with exquisite handling and taste, and covering the shoulders and the junction of the throat with the breast, as completely as the steel gorget of the sixteenth century. The full significance of these collars is not entirely certain.

It may be that in some cases the jewelry was sewn upon a collar-shaped piece of stuff, which has fallen away from those jewels which are found in the ancient tombs. Armlets worn on the upper arm and also on the wrist, like the modern bracelet, are as common as the necklaces, and there are evidences of a jewelled girdle as rich and as broad as the combination of necklaces, although this, being worn, as the necklaces are, directly upon the skin, is only in part seen, being often covered by the folds of the skirt, which is sometimes secured to the belt and falls below it. The stuffs themselves are found of still greater splendor in the representations of upholstered furniture; but this appears to be in part because a larger surface could be presented there than in the garment worn by man or woman. The patterns are so similar to the earlier painted designs of the tomb interiors that there becomes evident a close connection in the mind of the Egyptian designer between one surface and another, the beautifying of which was to be intrusted to color. There are, however, stuffs of the eighteenth dynasty, and perhaps earlier, usually of linen, which have been found in a more or less fragmentary condition in the tombs, and many of these are of the most exquisite beauty, equaling in the perfect intelligence of the design adapted to textile fabrics the finest work of the Byzantines or Persians 2000 years later. In the warm climate of Egypt the clothes even of persons of rank were very slight and rather for ceremonial purposes than for utility. In the Assyrian monuments, on the other hand, there is a marked tendency towards covering the whole person with what seem to be heavy draperies, whereas in the Egyptian bas-reliefs the lines of the body are often made visible through the opening which represents the outer garments, suggesting either a partly transparent material or at least a material so little adjusted to the person and so slight that the body itself was never forgotten. The monuments of the Assyrian tombs, on the contrary, show wrappings apparently opaque and stiff. It is evident, however, that embroidery was much used; for parts of the garments, as of a king, are sculptured in low relief upon relief, and in a way which resembles closely the representation of the embroideries upon priestly robes in the sculpture of the Italian Renaissance. As for jewelry, it was as rich and splendid in Assyria as in Egypt, though the forms differ.

Among the peoples of western Asia even partial nudity was considered dishonorable, or at least the badge of inferiority. Accordingly, the heavy garments shown in the works of art of Mesopotamia are easy of explanation, for where only slaves are wholly or partially naked, the tendency is strong towards the association of high rank with complete clothing. But then another tendency appears, that of making the garments of plainer stuff when the body is covered by them from shoulders to ankles, and using the richer stuffs, as above explained, for borders and the like. The Egyptian, with body, arms, and feet bare, might make his kilt of the most splendid piece of weaving obtainable, but the Assyrian, using yards of material for his garment, would naturally employ a simpler stuff: not to avoid expense, but because people of such refined taste as those of Mesopotamia would shun the use of large surfaces, of uniform

patterns, or the contrast, side by side, of differing patterns, of about equal size and brilliancy.

This tendency is not maintained, however, in that other ancient civilization in a sense equal in antiquity as in importance to the civilization of western Asia. The Chinese, from the oldest times of which we have any knowledge, have been among the greatest artists in textile fabrics, as in other industrial arts, and history does not tell us of the time when the population, whether of true Chinese origin or of conquering Tatar dynasties and their followers, have not been more and more clothed in proportion to their rank and station. Porters may go barelegged and barearmed, and, in warm weather, with the body naked above the belt, but as one ascends in the orders of rank, the clothing becomes more and more complete. This tendency is not, however, accompanied by any objection to brilliant and rich stuffs. The more abundant the means of the wearer, the richer his costume—that seems to have been the rule from all time; and this is partly explained by the beauty of the floral and foliated designs. Embroidery, too, is used to heighten and complete the splendid weaves, and at least from the tenth century of our era until the present day, the most magnificent stuffs in texture and in color are those used by the ladies and gentlemen of the court. On the other hand, personal jewelry, that which is worn apart from the garments, is not very rich nor very costly, though it may be effective. Strings of pearls are known, and many stones that we in the West ignorantly despise because they are inexpensive, are made much of by the Chinese, who will use a rough turquoise, a piece of veined or spotted agate, or even a beautiful piece of glass accidentally rich in its veining and cut deliberately from the vessel to which it belonged—setting them in bronze or silver gilt, and making a very decorative clasp, or buckle, or pommel of a sword hilt. Chinese costume should be most carefully studied, because it has been maintained in its traditional character even to our own time. The blue cotton blouse of the workman, and the garment of delicate blue and gold silk, woven in very elaborate patterns expressly for this garment, with gold or gilt buttons spherical in shape and working in loops, are mainly the same garments as those of a century ago.

The people of India are even more divided among themselves in details of costume than are the people of Europe. The general character of the different races, north and south, leads towards a great distinction between classes of the population. The simple piece of stuff, 4 feet wide by thrice as long, worn by the women, is most gracefully draped about the shoulders and breast; in very recent times it is often a piece made in Europe of three large handkerchiefs, with their several borders complete. This is worn over a petticoat; arms and legs are bare, and the feet, except for occasional use of sandals; but the dark skin is barred and spotted with many and large jewels. Necklaces, broad armlets and wristlets, rings for toes and fingers, earrings, and nose rings, are all made of silver wire for the poorer women, who often put their whole savings into these adornments. The necessity of providing for a very warm summer climate, and in the south for a wholly tropical year, has caused the making of muslins of a fineness and perfection of weave never approached in Europe, though these native manu-

factures have been destroyed by the competition of British cottons. A few of the native princes alone encourage the making of these exquisite weaves. Besides these there are figured cottons of such perfect make and so beautiful in design that they are worn even by princes, as if of equal importance with silk. The gold-flowered and silver-flowered textiles of silk and cotton, or even of fine cotton alone, are famous in Europe, under the name "kinkab" or "kincob." The costume of India in general is mainly an affair of beautiful stuffs, very little shaped to the body and usually worn loosely, and of jewels in great abundance.

Among the people of the tropical islands, the Malays, and the black and brown inhabitants of Polynesia, the art of weaving has never reached sufficient perfection to allow the stuffs to be sought for their own sake. Very beautiful patterns are printed upon cotton by the women of the larger islands, wood blocks being used for the purpose in a way almost exactly like that employed in the printing of cretonnes and wall papers among the Western nations; but these stuffs, however attractive to our eyes, however superior in design, are yet inexpensive—they could be produced by any one who has a little skill in the use of the hands, and are therefore not a part of ceremonial or decorative costume. A few very beautiful weaves exist, as in the Solomon Islands, and especially in New Zealand, but still they are not of rare material, nor is the elaboration of the design very great. The skill in the working of metals, which is great among the Indians of the continent, is much smaller among the islanders, and so it happens that personal jewelry also is but little sought for by the chiefs. The result of all this is seen in the simple and tasteful use of natural productions, brilliant flowers, and richly colored fruits and seeds, which, strung as necklaces or worn as pendants, have especial significance and are attached each in its way to the traditional ceremonies of these curiously civilized peoples.

If now we turn to the race which of all peoples has had the most influence over modern intellectual life, we shall find that the Greeks of antiquity limited their desires in the way of textile fabrics to very simple patterns, as of stars or round spots diapered over the surface of a stuff, with somewhat more elaborate patterns of zigzags and frets in the borders. Their costume, including their jewelry, was, in fact, marked throughout by extreme simplicity, which increases as our studies bring us to a later time. The statues discovered on the Acropolis at Athens since 1883 are certainly of the century before the Persian invasion of 480 B.C. They show a number of garments, certainly as many as three, worn one over the other by the priestesses represented in the statue; and each of these garments is made of a different stuff, all the stuffs, or all but the craped undershirt (the *chiton* of later dress), covered with elaborate patterns in several colors. There is nowhere a more interesting study of brilliant coloring in costume than were these statues when first discovered, and fortunately the finest of them have been reproduced in water-color painting, and these water colors often multiplied in chromolithography, and published by the archaeological societies. It is clear that, immediately after the Persian War, during the period of the Athenian hegemony in Greece, beginning with 477 B.C., the use of these striped and spotted

stuffs becomes much less common, at least in the mainland of Greece, and the use of plain materials, white, bordered with stripes, or of one rather subdued color perhaps striped at the edge, becomes the rule. Those admirable bronze statues which were discovered in the famous villa at Herculaneum and now stand in the Museum of Naples (the Room of the Greater Bronzes) show perfectly well—better than any bas-reliefs, however elaborately detailed—the true Greek sense of what was beauty in costume. The long *chiton*, which, left ungirdled, would sweep the floor, is belted up so far as to allow a foot or more of its length to hang over the girdle outside of the skirt or lower part, forming a sort of pocket, known as the *kolpos*. Outside of this is seen hanging what looks like a cape, and which generally reaches just the line of the girdle or may fall a little below it. This, however, is not a cape nor a separate garment at all: it is the reverse or turning over of the *chiton* at the top. Of the *chiton* there were several forms. The earliest was not sewn at all, and therefore left the right side, thigh and leg, exposed on the slightest movement. A later form was a sewn-up cylinder, a long shirt in the modern sense. The stately maidens of the reliefs and the vase paintings often wear one of these two forms of *chiton*, and nothing else. To such a dress, even on occasions of great ceremony, there is nothing to be added, except perhaps a more splendid brooch on the shoulder, a broader and more brightly colored border to the *chiton*, perhaps an armlet, perhaps richer and more glittering earrings. Splendor in the more modern sense was hardly desired, and beauty was shown in the perfect taste with which these simple appliances were disposed. Other garments, however, are seen in the sculptures and vase paintings: the *himation* and a variety of it, the *chlamys*, were square or oblong pieces of woolen cloth, draped about the left shoulder and covering the body more or less as it might be adjusted; it was held sometimes by brooches. Statues show a garment arranged nearly as the Scotch plaid is, at times folded long and narrow, falling over one shoulder and passing around the waist; and this is thought to be a long and narrow *himation*. It is impossible to distinguish these garments from the *epiblemata*. The essential fact is that the Greeks, both women and men, wore a long shirt and a loose, square shawl over it, and nothing else on body or limbs.

The Etruscans were quite as simply clothed as the Greeks. The later Etruscan work passes by insensible gradations into that Italian work of the centuries during which the Roman Republic and the early Empire controlled the whole peninsula, and introduced insensibly its own strongly Hellenic tendencies into the arts of the subject countries. The effect of this on the art of northern Italy was altogether fortunate, except in so far as the lover of strongly accentuated national peculiarities found reason to regret their partial disappearance. The terracotta sarcophagi, with high reliefs and with what are almost statues wrought upon the covers; the bronze statues and groups, the jewelry of the fourth century B.C., and the following epoch, are almost Greek in their charm, while preserving a certain attractive local color. It is probably because of this constantly increasing influence of the Grecian artistic sense upon all the nations of Italy that the Roman dress from the earliest times known to us remains

Greek in its simplicity, although very different in form. There were different ways of wearing the toga, some of which were connected with ceremonial occasions. Thus, when a statue or a bas-relief shows a Roman draped in a large and elaborately folded toga, one fold of which is brought over the head, he is assumed by modern students to be a person who is performing a sacrifice. The toga, as ordinarily worn, showed the *tunica* in front, from the throat nearly to the waist, but the long end could be thrown over the right shoulder so as to cover the *tunica* entirely, and in this way the toga would cover the whole person, from the neck to the ankles. Here, as among the Greeks, good taste dictated the utmost simplicity of effect, except in the mere arrangement and careful disposition of the folds. There was no other garment of the men while in the city which in any way concerned their appearance, as the only leg coverings known were bandages or wrappers, not unlike those worn to-day by the peasantry in some parts of Europe. On the other hand, the *toga prætexta*, which was worn by certain officials and even by some priests, had a "purple," i.e., a dark crimson border, and the *trabea* seems to have been a sort of cloak with still more elaborate stripes, including perhaps one made entirely of red cloth, which generals were allowed to wear on the day of their triumph. It is probable, however, that in this last usage the military cloak of red was worn during the triumphal procession, that being the one occasion when the soldiers of the Republic were allowed to appear within the walls with their arms and military trappings. The women were dressed as simply as the men, wearing over the *tunica* merely a garment called the *stola*, which replaces for them the toga of the men, and when the woman of rank went abroad, usually in a litter, a shawl-like garment called the *palla* might also be added. That which makes the peculiar stateliness of the dress seen in female statues of the early Empire is the contrast of the folds of the long *tunica*, reaching the floor, nearly covering the feet, and forming a strongly marked base, as it were, for the whole figure, while the more loosely folded *stola* above it seems to reinforce the lines of the undergarment. A veil of more or less thin and floating material covered the head and could be brought around to the front to hide the face at pleasure. It must be constantly kept in mind that the idea of beauty in dress was simply uniform whiteness and many skillfully contrived folds; the whiteness was kept up by the use for woolen garments of the most elaborate system of cleansing applied by the *fullones*, or cleansers, and, for the folds of the drapery, highly trained experts—body servants who knew their business—were employed. It is evident that these peculiarities of dress had much influence upon the art of sculpture.

In all the above discussion of costume one thing is very noticeable—the absence of anything like tailoring, except, perhaps, among the Chinese. The clothes of the Greeks and the Romans, like those of the people of the Pacific islands, always approximated to the ideal of an uncut, unsewn, unaltered piece of textile fabric; square or oblong, as in the *himation*, *chlamys*, *sagum*, or *paludamentum*; semicircular or semioval in shape, or approximately so, as in the toga, or simply sewn down one side so as to make a tubular garment of one piece of stuff, as in the

COSTUME



1. GREEK.
2. ROMAN.

5. GERMANS (Thirteenth Century).
6. NOBLES (Fourteenth Century).

later chiton, and in the tunica. A curious reproduction of this characteristic of ancient costume exists among the wilder Arabs, the Bedouins of the desert, and the horsemen of the uplands. They wear a shirt, indeed, and this is of thicker stuff and covers the body more completely than what we know by that name, but apart from this their covering is almost wholly a matter of unaltered or scarcely altered pieces of woollen. Perhaps two breadths of the narrower stuff are sewn together to make the *haïck*, or, as in the north of Africa, a square of striped woollen stuff is caught up in the middle of one side so as to form a sort of hood, as in the *burnous*; or, as in the *aba* or *abayeh*, the square of stuff may have its two outer edges folded over towards the middle, so that the two edges meet or nearly meet, and then two openings are made in the two outer folds where the stuff is actually creased, which serve as armholes, so that the square blanket resembles an overcoat. But in all this there is absolutely no fitting of the piece of stuff to the body. It is a heavy woollen blanket, which is adapted more or less to the shoulders so as not to slip off, but is not otherwise altered in any way, and might cover a man or a woman, and a person of any stature. What is curious about this costume is the enormously heavy woollen dress worn in the desert and under the semitropical sun. It is evident that nothing but a heavy material is expected to keep off the heat of the sun or the burning wind of the desert; and therefore a man who wears only the long shirt, and has the legs and feet, arms and neck, absolutely naked, will pile two or three of these heavy woollen things upon his shoulders and head. The result of this arrangement is that the only decoration sought for is in the beauty of two or three colors arranged in stripes of different widths, and broken more or less by the carrying of threads of different colors across the stripes, like the countercharging of heraldry. A much greater development of design by stripes alone is in the cotton *dhurries* of India. The *aba* may indeed be further adorned by very simple embroidery in woollen thread.

The first appearance of any tendency to fit the garments to the person among nations more western than the Chinese is probably in the leg coverings of the Persians and Syrians, as represented in Grecian and Greco-Roman art, and yet these garments are of extreme simplicity and there is no appearance of tailoring in any modern sense in connection with them. They are merely loose trousers, gathered at the ankles, or sleeved tunics; and their use seems to have come from the mountain regions of Asia Minor and the shores of the Caspian Sea. The barbarians of Europe, Gauls, Scandinavians, and Germans, made up suits of clothes in a not dissimilar way; but it does not seem that their example affected the Greco-Roman world very much.

The beginning of change is to be looked for in the Byzantine Imperial epoch. From a time as early as the seventh century A.D. there is a constant increase in the number of garments worn, and in the elaboration of their shape and their combination, while at the same time the costliness and splendor of the stuffs are in no way diminished, and the custom begins which was destined to have so much effect on the costume of later times in Europe, the sewing of jewels, mounted in slender rings, or *chatons*, of gold or silver gilt, to the material. Sometimes smaller fragments of glittering material of no value were

used in this way, as in a later time pieces of mirror were used throughout the lands influenced by Persian decorative ideas. In the Byzantine Empire the dress of the officials shows a certain disposition to follow early Roman traditions, but only in the general shape of outer garments and to a certain extent in their names. The general aspect of a member of the Imperial family, or an officer of the court, as it is seen in the mosaics of Ravenna, or in the illuminated manuscripts of the time, is altogether different from that of higher antiquity. The robes reached to the feet; they were closely sewed up and not very loose or flowing, not greatly tending towards elaboration of folds or to what we commonly call "drapery"; and over them are worn dalmatics, maniples, and stoles, not merely by the clergy, but by the laity as well, and showing plainly where the peculiar clerical dress took its origin. See COSTUME, ECCLESIASTICAL.

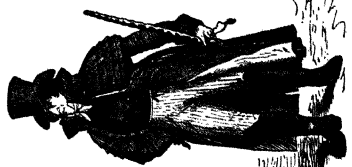
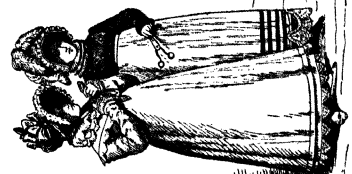
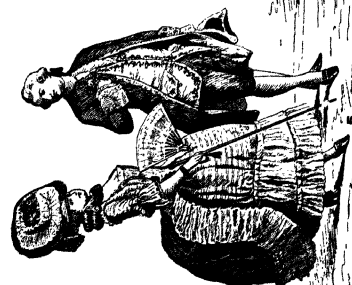
The Eastern influence was still strong, and all costume which was at all splendid was a matter of long and ample robes, made of stuffs of almost incredible richness, and more or less richly decorated by embroidery. Western dress was at this early time very different from anything in common use in the Byzantine Empire, except in so far as that the poorer people, and those engaged in out-of-door work, would naturally dress in almost the same careless fashion East and West. For one thing, it was more nearly classical Roman in character. If the costume of the eleventh and twelfth centuries, in the lands which are now France and Germany and England, be studied in the sculptures of Romanesque and Gothic buildings, or in the rare illuminations of manuscripts of that time, it will be seen that a certain antique or early Roman character obtains in the garments worn by persons presented as kings and princes, which had already been lost in the Eastern Empire. The robed figures of the porch of Chartres, or the doorways of Le Mans, do not seem to record much that was splendid in the way of stuffs or of jewelry, loose or applied to the garment. Their robes are still simply falling in loose folds, girded at the waist and differing from the garments of antiquity mainly in this, that the arms are always covered by sleeves. Men and women alike wore a gown, that garment which in the French archaeological vocabulary is called the *robe*. This garment, which is treated under DRESS, served for people of every rank and of both sexes, but its fashion changed very much, and in like manner the resulting appearance of the clothed figure in the sculptures changed greatly between the twelfth and the fourteenth centuries. In the fourteenth century it grew more and more into that stately but most inconvenient garment, well known to us from the paintings in manuscripts of the time of Richard II of England and his immediate successor, and Charles VI of France. This garment swept the floor. It was girded around the waist with the military belt, or some modification of it; it had sleeves, which also reached the floor, and were of fullness equal to that of the skirts, covering the hands also when the arms hung down. The collar covered the neck completely in a solid cylinder, and rose on the sides nearly to the ears. How this rich and grandiose dress could be used at all in summer, and how it could be girded and shortened in any way, in time of necessity, does not appear, nor is it

known whether the men wore complete leg coverings of some kind beneath this long and completely closed skirt. The dress of elegant women of the same epoch was less elaborately conceived; the same habit of long sleeves prevailed, but the upper part of the sleeve was pierced with a slit through which the forearm could be extended. The result of this was that the robe, as a garment for women, hardly changed during the next two centuries, whereas the use of it for men went out very soon, and while there are still representations of gentlemen of the first half of the fifteenth century dressed in robes reaching the ground, those robes are far more convenient than before; they are evidently capable of being tucked up, and the man is dressed beneath his skirt, which can either be removed or shortened up to nothing when the occasion of ceremony is passed. Finally, as early as the second decade of the fifteenth century, it disappears from the dress of men, and from that time on the short-skirted garment, called *rochet*, or corset, became the dress of business, while the name *cotte* was then and thereafter given to a very tight-fitting garment, laced or buttoned close to the body and having a skirt reaching only to mid thigh. This last-named garment existed under the name of *cotte d'armes* as long as the complete suit of armor was worn by gentlemen, and in this case it was embroidered with the armorial bearings of the wearer. The French terms were commonly used in England as well, as Chaucer lets us know; and in modern study we can hardly find English equivalents. Under all these garments were worn the long, close-fitting stockings, serving as the only covering from the waist to the toes, except as the skirt covered the upper part of the thigh. These changes involved the complete establishment of tailoring as the main thing in elegant costume. From the middle of the fifteenth century on, the dress of nobles and courtiers, and of men who affected elegance, was a matter of cutting out and shaping, fitting in gores and gussets, and, in fact, adapting garments closely to the body in the first place, and then covering them with elaborate adornment. This might be applied in the way of *passementerie*, or by modifying the whole surface of the stuff by what we now call quilting and the like. A piece of brocade used for a doublet or the body of a gown would be gathered up into puffs and projecting rounded surfaces, the lines of sewing between those projections being themselves decorated and even including the setting of a pearl or of a jewel of some other kind set in a gold *chaton* at the junction of these two lines of stitching. The stockings were the only part of the dress that was not elaborately decorated; and these stockings were half concealed in the sixteenth century by the enormous *hauts de chausses*, which, in 1530 and the following years, are sometimes in two or three rings of puffs like rounded ridges, passing horizontally around the thigh, and which, in the closing years of Elizabeth's reign and the corresponding times in France, the reigns of Henry III and Henry IV, are closer in their fit and resemble not distantly the knee breeches of the eighteenth century. They are, however, made of costly stuff, and elaborately adorned almost in the style of the body garment. Still again, in the time of James I of England, the *hauts de chausses* were stuffed (bombasted), or held with springs in a single rounded projection, as if the man had been

thrust feet foremost through a rather flat, oblate spheroid. This projected so much all around the hips that the sword had to be hung in a horizontal position and great pains taken to prevent its being entirely dislodged by the monstrous garment.

At no time during the Middle Ages and the epoch of the Renaissance was the tailoring and mantuamaking more rich and fantastic than during the French religious wars and the succeeding reign of Henry IV. Painted portraits, prints from famous engravings, carved ivories, medallions, and painted enamels of the time, exist in some quantity; and they agree in telling the most extraordinary tale of splendid extravagance in the dress of both sexes. Embroidery was loaded upon bodice and doublet, or was dispensed with only when a very rich brocade was employed; and lace, or its earlier forms of cut work and drawn work, and needle embroidery in pierced patterns like filigree, were used with freedom. The circular ruff, projecting like a dish on which the head seems to lie, appears, but is not yet so popular as the broad and flat laced collar, sometimes lying on the shoulders, sometimes standing stiffly out horizontally, or for women in steep, upward slope behind the head and neck. The fashion of bombasted thigh coverings for the men is identified in artistic history with the reign of Henry IV of France, but it did not last very long, being replaced by the loose, short trousers of about 1625 and after. No costume in the modern sense is perhaps more graceful and spirited at once than the dress of the gentlemen of the time of Louis XIII, which, with its short trousers, the stocking below covering the calf of the leg, which was concealed by the boots commonly worn out of doors, the doublet, reaching a little below the waist, and worn loose, generally unbuttoned in front and showing the shirt in its full folds, the short cloak, worn on the left shoulder, except when it was gathered around the body, the flat hat, with very broad brim, and soft falling feather, and the broad, loose collar, is a complete and graceful translation into form of those ideas which the modern world has conceived—ideas absolutely contrary to those of antiquity. Simplicity and grace have given place to picturesque combination of small details; and here is the new theory, perfectly put into practice. The reign of Louis XIV had but little influence on this dress of men, except to stiffen it and make it rigid and hard, but the dress of women improved, on the whole, in tastefulness throughout the seventeenth century, and as late as 1670 was introduced that admirable costume which we identify with Madame de Sévigné—a skirt not very full, over which was worn a short upper skirt, open in front; a bodice fitting snugly, but not involving very tight lacing; a stomacher, but not excessive in its length; sleeves reaching the elbow, and accompanied by lace ruffles, which partly shroud the lower arm; the bodice cut low, but not to excess, and a cape worn over the neck and shoulders on occasion of going out-of-doors. The same thing, in simpler stuffs and in graver colors, was worn by the wives of the wealthier *bourgeois*, and this is the dress which we identify with the women of Holland and the English Puritans. It is preserved for us in a great number of paintings, and in the prints from Hollar's engravings; and it has impressed itself upon modern designers as the most complete type of womanly costume which we know;

COSTUME



1. ENGLISH WOMEN (1590).
2. ENGLISH NOBLEMEN (1625-40).
3. FRENCH (1660-1700, Louis XIV.).
4. FRENCH (1700-40).
5. FRENCH (1780).
6. FRENCH (1808—Empire).
7. EARLY NINETEENTH CENTURY.

but that is because the richer dress of the time is impossible to realize nowadays—it seems non-human, as if of fairyland. The eighteenth-century dress in England, which was at times popular and acceptable in decorative design, is a modification of it, not for the better. The fop of 1750 is less beautifully dressed than the *musquet* of 1650, and the ladies of 1775, with their enormous hoops, far less charming in appearance than Madame de Sévigné 100 years earlier.

The French Revolution in 1789 brought in a number of strange vagaries in dress—red and white striped waistcoats, stockings striped blue and white in horizontal rings, white cravats wound round and round the neck until they reached the point of the chin, while at the same time the women wore the lightest and thinnest costume possible, in fancied imitation of the Romans. Cocked hats of exaggerated shape for the men alternated with steeple-crowned hats with curly brims; while the female costume was finished by the most elaborate pile of curls and crimps, crowned by an enormous cap, either simply of muslin and lace, or with these combined with a sort of hat half concealed with feathers, flowers, and ruffles of lace. The momentary prohibition of elegances of this sort under the Revolution led to a change in the dress of both sexes, which was not to be temporary, except in details. Thus the dress which we call that of the "Empire," the famous "pink nightgown," girded immediately below the breasts and hanging thence to the ankles, but so close that a woman could hardly walk and was utterly unable to step across a gutter, was worn with low shoes and with an unprotected neck, while the cold of winter was met by a *pelasse*, generally worn open in front and affording merely shelter for the shoulders and back, however richly it might be furred. The men fell immediately into the simple and not impressive dress of a time when the civilian was of little account, and any man who was elegant in his aspirations found some excuse to wear a military or official uniform. The civilian dress was then merely a waistcoat, over which was worn a long-skirted coat, and the *pantalon*, or tight-fitting breeches reaching to the ankle instead of the knee. The large and loose white cravat still continued. From these dresses all our modern fashions have followed. See FASHION.

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There is also a wealth of material available in the form of prints, paintings, and photographs, as well as in books about engravings and paintings.

COSTUME, ACADEMIC. See DEGREE.

COSTUME, ECCLESIASTICAL. The dress worn by ministers of religion acting in their official capacity, in distinction from the dress of ordinary life in different lands and periods. While practically all such officials do wear such distinctive dress, even though in certain cases it is very simple, it is necessary, in view of many and often bitter controversies on the subject of the relation between such costume and religious doctrine, to emphasize the fact that costume belongs to the discipline, not the doctrine, of religious, more especially Christian, bodies. The competence of any such body acting in its corporate and legislative capacity to prescribe a uniform dress for purposes of edification, indication of functions, or liturgical propriety, is undoubted, and is analogous to the requirement of distinctive uniform, e.g., in the army or the law courts. An association of such dress with

official powers or as essentially doctrinal in itself is erroneous, though often popularly assumed. The Christian era has witnessed the development of ecclesiastical costume in so marked a way as to make the subject one of importance more than archaeological.

History of Development. Under the Jewish dispensation the costumes of the officiating priests and Levites, like everything else pertaining to the divine worship, was minutely prescribed and rigidly observed. The purpose seems to have been, as with other parts of the Jewish system, to distinguish the Jews as a people from all other nations, and their religion from all other religions as one of special revelation and positive injunctions rather than natural religion accompanied by a system of human origin. The attempt to trace the vestments used in the Christian Church to the Jewish vestments has been made at different times. The theory breaks down historically and when applied carefully in detail. Certain features which are found in common are accidental, not fundamental. Underlying the prescribed Jewish system of vestments, however, is the principle that the divine sanction is given to the use of such costume for such purposes as are mentioned above. This principle, rather than any special application of it, is characteristic of both the Jewish and Christian development of costume.

In all probability the Christian clergy at first used no distinctive dress, and so long as the garb of daily life continued unaltered in the higher ranks of society, a celebrating or officiating bishop, priest, or deacon differed only possibly in a few slight variations from a well-dressed layman. This very absence of distinctive costume, however, was really an indication that the Christian clergy differed from the Jewish orders and from the non-Christian *sacerdos* or other minister. From this early stage two principles entered into the development of a more or less characteristic dress for the clergy—the principle of fixity as opposed to changing fashions in lay costume, and the principle of putting on the best apparel when employed in the service and worship of God. The former resulted in the style and articles of vestments becoming permanent and subject to authoritative prescription; the latter introduced the element of refinement, beauty, and dignity in the dress of the clergy. The recognition of Christianity by the Roman Empire under Constantine gave an impetus to external splendor in all parts of Christian worship. Canonical legislation prescribed as a rule many things which had been heretofore hallowed by custom and religious association and also put a check upon the discretion or caprice of individuals. The growth of such regulation was slow and local rather than general from the third to the eighth century. In the revival of interest in the details of the Christian religion which characterized the age of Charlemagne in the eighth and ninth centuries is to be found explicitly the teaching that the vestments of the Christian clergy are a matter of great importance, and also in this period there is found the custom of giving a mystical interpretation to these vestments in relation to the services and functions where they were worn. The process in development was practically the same throughout the Church. The gradual tendency of the East and the West to diverge in matters political and social also worked out in the externals of religion, and the breaking off of intercommunion

between the Eastern and Western parts of the Church, which reached a crisis in 1054, emphasized this tendency. Although the principles are the same throughout the Church, it is convenient to consider the specific developments of vestments under different heads.

Vestments in the Western Church. In the West the use of ecclesiastical vestments developed with considerable uniformity so far as the employment of certain articles of dress for certain liturgical offices was concerned, but with latitude so far as specific shape, material, and rigidity of use were concerned. There grew up a variety of uses, largely coterminous with national or diocesan subdivisions, e.g., Gallican, Italian, Sarum (Salisbury), Milanese. Not until the sixteenth century and the Reformation movement do we find divergences relating to the authoritative employment of certain vestments. Since the sixteenth century the Roman Catholic discipline on the subject of vestments has tended strongly towards absolute uniformity, while the Anglican discipline has tended more towards specifying what is legal and what is allowable. In general, the same vestments are legal in all parts of the Western church—Roman, Anglican, American, and Canadian. Hence they may be described as belonging to all and not confined to any one section. Specific variations will be mentioned. The laws governing the use of costume are set forth for the Roman communion in the *rubricæ generales* of the missal and are in form historical and descriptive, not imperative (e.g., *celebrans semper utitur*, etc.), while the Council of Trent merely mentions *vestes* as part of the Apostolic traditions of the Church. The Anglican communion sets forth the use of vestments in canons and in rubrics of the Book of Common Prayer and in statements of general adherence to the customs of the Western church.

Vestments, Sacrificial. The *chasuble* is the principal vestment regarded as strictly sacerdotal



CHASUBLE, MODERN FORM.

or sacrificial. It was originally an ample round mantle falling over the arms, and was an outdoor garment gradually introduced inside the

COSTUME, ECCLESIASTICAL



1. JEWISH HIGH PRIEST.

2. WESTERN BISHOP, with mitre, cope, rochet, stole and crozier.

3. ROMAN CATHOLIC BISHOP, in rochet and mantelletta.

4. EASTERN BISHOP.

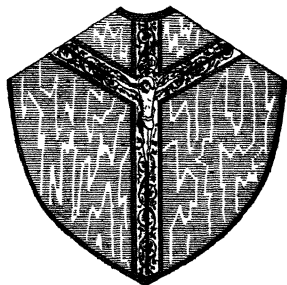
5. ANGLICAN BISHOP, in rochet and chimere.

6. Geneva gown and bands.

7. Dalmatic and alb.

8. Surplice, stole, cassock, and biretta.

Church. From its shape and fullness it was found an inconvenient garment to wear in ministrations at the altar, and it was gradually modified by cutting it away so as to leave the arms



CHASUBLE, OLDER FORM

free until, from the older form, or the Gothic chasuble, it assumed after the seventeenth century in the West very commonly the extreme modern, or fiddle-back style, as seen in the accompanying illustrations. The older shape has been retained in the Spanish and Anglican uses and is to some extent being revived elsewhere. Traces of the use of the chasuble as a distinctively ecclesiastical vestment are found as early as the first half of the sixth century, and the Fourth Council of Toledo (633) expressly mentions it as such. Its use seems to have been confined at first to priests, and even at the present time, in Advent, Lent, and other penitential seasons, the chasuble is worn at solemn mass in the Roman communion by the deacon and subdeacon, but laid aside when they sing the Epistle and Gospel. Chasubles are sometimes worn in the Roman rite by canons and other dignitaries simply present at a pontifical mass. In most Western countries a large cross, either in the Latin or in the Y form, is embroidered on the back, while on the front is either a cross or a long, straight piece of embroidery. The *stole* is a narrow strip of the same material as the chasuble, with more or less elaborate embroidery. The usual decoration consists of a cross where it will be in the middle at the back of the neck and a cross on each end as it hangs down. It is considered a symbol of priestly jurisdiction, in which sense the Pope may wear it constantly, even when not officiating; and this is also the use of priests in the Roman and other communions when present at certain offices without officiating. It is worn, as a rule, in the ministration of all the sacraments. At the altar the priest wears it crossed over the breast and the deacon over the left shoulder; at other times, and also by a bishop, it is worn hanging straight down. The earliest traces of its use in the West as a sacerdotal vestment are found in Spain, where the Council of Braga (563) speaks of the *orarium* as worn by deacons, and the Fourth Council of Toledo mentions it as a vestment of bishops, priests, and deacons. The name "*stole*" (Gk. *στολή*, *stolē*) may indicate that a Western piece of apparel, adopted into Eastern use, came back to the West later and passed into ecclesiastical use. The earlier use of the term "*stole*" in Greek ecclesiastical writers is not consistent with the article later called by the same name. It seems to have been at first a

linen handkerchief longer and narrower than our modern handkerchief. The *maniple* is like a short stole and is worn hanging from the left wrist by the celebrant, deacon, and subdeacon at the altar. Its origin seems to have been in the napkin with which the consul gave the signal for the start in a chariot race. The *alb* (Latin, *albus*, white) is a close-fitting garment with sleeves, of plain white linen, reaching to the feet, though the lower part may be made of lace. It sometimes has pieces of embroidery, called "*apparels*," sewn on it in four places. Originally it was probably nothing more than the ordinary tunic of Greek and Roman costume. It is confined around the waist by a linen girdle. The *amice* is a piece of fine linen, oblong in shape, which the priest rests for a moment on his head and then spreads on his shoulders, tying it by strings in front. It originally covered the head, and to this day, in the rites of certain monastic orders which have preserved some traditional peculiarities, the priest wears it in that position until he reaches the altar to begin the service. These vestments are put on in the following order: *amice*, *alb*, *girdle*, *maniple*, *stole*, *chasuble*. The special vestments of the deacon and subdeacon are the *dalmatic* and *tunicle*, respectively, which differ very slightly, both being close-fitting vestments of the same material as the chasuble, reaching to the knees and having sleeves.

The color of all vestments seems to have been white at the first. The introduction of colors was very gradual and not without opposition. To Innocent III (1198-1216) is traced the setting forth of the simple sequence of colors which has largely prevailed in the West. The customary modern use prescribes *white* for the feasts of our Lord, for feasts of the Blessed Virgin, and for other virgins who were not martyrs, and for confessors; *red* (the color of fire and of blood) for the Feast of Whitsunday and of all martyrs except the Holy Innocents; *violet*, the color of mourning and of penitence for the season of Advent, from Septuagesima to Easter, the Ember days, except in Whitsuntide, and the Rogation days; *green*, the color of hope, for ferial or ordinary days. *White* is also used at confirmations, ordinations, consecration of churches, baptisms, and weddings. *Black* is worn on Good Friday and in services for the dead. Vestments of cloth of gold or very rich and costly material are considered festal and allowed to be used in place of white, red, or green. This sequence was adopted generally on the Continent and in England in the important churches of Canterbury, York, London, and Exeter, while the diocese of Salisbury developed a use of its own confining the colors almost exclusively to white and red.

Vestments, Episcopal. The vestments officially worn by a bishop in the exercise of his functions are numerous. In part they indicate his position as including all the powers of the Christian ministry, in part they are peculiar to his episcopal office. The full vestments of a bishop when at the altar include (over a purple or black cassock) the *amice*, *alb*, *girdle*, *stole*, *maniple*, *tunicle*, *dalmatic*, *chasuble*, and *mitre*, while the *pastoral staff* is carried in the hand. At this and at other times the bishop wears a ring and pectoral cross. Sandals and gloves are included in the Roman use. The *gremial veil* is an embroidered cloth which is spread over his knees when he sits during the service. In other functions, such as confirmation, he wears cope

and mitre with a stole for the administration of the sacraments. In ministrations of certain functions of less solemn kind he may wear simply the rochet. The *mitre* is the ornament worn in solemn services by bishops and abbots of certain monasteries which carry with them a quasi-episcopal jurisdiction. The mitre may be described as a tall, tongue-shaped cap, terminating in a twofold point, which is supposed to symbolize the cloven tongues in the which form the Holy Ghost came upon the Apostles. The *pastoral staff*, or *crozier*, in the case of bishops resembles a shepherd's crook, and is given at their consecration as a symbol of the authority with which they are to rule their flocks. An archbishop's pastoral staff does not differ from a bishop's, but he sometimes has carried in front of him a staff surmounted by a cross or crucifix—that of a patriarch having two cross bars. The *pallium* is a circular band of white woollen stuff surrounding the neck, with a pendent strip before and behind. It is generally richly embroidered and marked with several crosses. There is much controversy among historical and archaeological scholars as to the origin and significance of the pallium. The two main theories are that it represents a vestment used in the Imperial court and sent at first to certain ecclesiastics as a mark of Imperial favor, whence it passed into similar use by certain bishops of patriarchal rank to confer upon archbishops in the patriarchate; or that it is a symbol of jurisdiction and is worn by the Pope to indicate universal jurisdiction, and conferred by him upon archbishops who acknowledge his supremacy. It is worn by such only within their own territorial jurisdiction, at high mass on solemn days. The sandals were not originally confined to bishops; the earliest authors who mention them allude to a special shape worn by deacons and subdeacons. The *pectoral cross* is a small gold cross adorned with jewels which is worn by bishops and mitred abbots as a mark of their office. The *episcopal ring*, worn on the middle finger of the right hand and generally set with a large amethyst, is supposed to symbolize that the bishop is wedded to his diocese. Among less formal vestments the *rochet* alluded to above is a close-fitting vestment of linen, somewhat like a shorter alb or surplice with tight sleeves. It is confined to bishops and abbots, also sometimes worn as a special privilege in the Roman use by canons. The *mozetta* is a short cape covering the shoulders, a part of the state dress of the bishop when not officiating, and is worn with the rochet. The *mantelletta* is a sleeveless garment of silk or woollen stuff reaching to the knees, worn according to Roman use by cardinals, bishops, and other prelates. It is used to cover the rochet, so that bishops wear it when out of their own dioceses, the uncovered rochet being a symbol of jurisdiction. A bishop when wearing a pectoral cross does not cross the stole when preparing to celebrate.

Vestments, general. The most important vestment to be mentioned under this head is the *cope*, a wide cloak of silk or other costly material reaching nearly to the feet and fastened in front by a clasp called the *moose*, and having a semicircular hood at the back. While it is worn by the officiating priest in benediction and other solemn rites, it is not distinctly a sacerdotal vestment, and is worn by cantors at solemn vespers and by other laymen. The *humeral veil* is an oblong scarf of the same ma-

terial as the chasuble, worn by the subdeacon at high mass when he holds the paten from the offertory to the Paternoster, and by the priest when giving benediction or carrying the blessed sacrament in procession. It is worn over the shoulders, the paten, pyx, or monstrance being wrapped in it. The Levites (Num. iv.) were allowed to bear the sacred vessels only when wrapped in coverings; and although those in holy orders (and they alone) are allowed to touch the eucharistic vessels with the bare hands, the use of the veil is probably an expression of the feeling of reverence inculcated by the Jewish rule. The *surplice* (called also *cotta* at first in Italy, now generally) is a garment of linen worn by all clerics and assistants in choir and by priests in the administration of the sacraments. As late as the twelfth century it was supposed to reach to the ankles, but in modern times it has been very much curtailed, and since the seventeenth century commonly ornamented with lace. Under all the other vestments is worn the cassock, a close-fitting garment reaching to the feet, which is the distinctive dress of clerics, in church and out. The color varies, being black for a simple priest, purple for a bishop, and red for a cardinal; the Pope alone wears a white cassock. The *berretta* (or *biretta*), which is also a part of the priest's street or house dress, must be mentioned under official costume, as the rubrics prescribe it for the sacred ministers going to the altar and for ecclesiastics in choir. It is a square cap with three ridges extending outward from the centre of the top—four in the case of doctors of divinity. "At Rome," says Benedict XIV., "and in most churches the berretta was unknown as late as the ninth century. Its ecclesiastical use began when priests gave up the ancient custom of covering their heads with the amice till the actual beginning of the mass." The *zucchetto* is a small, round skullcap, of color suited to the wearer's rank, which, if worn in church, is removed only at the most solemn parts of the services.

Eastern Vestments. The influence which between the eighth and twelfth centuries in the West bore so strongly upon the development of ecclesiastical costume, that of the numerous liturgical writers, was almost wholly lacking in the East, where between the Patriarch Germanus of Constantinople in the eighth century and Simeon, Archbishop of Thessalonica, in the fifteenth, scarcely one of importance is to be named. The natural conservatism of the Oriental mind has also militated against change in the ecclesiastical usages. The Western maniple, amice, and cope are unknown in the Greek and Russian churches; in place of the first named, somewhat similar bands (*epimanikia*) are worn around both arms by bishops, priests, and deacons, those of the bishop being richly ornamented. The lector and readers wear an ample white or reddish vestment, called *phelonion*, but differing from the priestly chasuble in reaching only to the waist. The subdeacon wears the *sticharion*, a sort of dalmatic, narrower and shorter than that of the deacon, who wears in addition the *orarion*, or stole, hanging before and behind over the left shoulder. The sticharion has undoubtedly developed from the alb, but more closely resembles the dalmatic both in shape and material. The priest wears the sticharion, the *epitrachelion* (a long narrow stole something like an archiepiscopal pallium in the West), the *zone*, or girdle, and the *phelonion*, or

chasuble, which in Russia is much abbreviated in front, but hangs down to the ankles behind. The episcopal vestments are in the main similar to those of the priests, but more richly decorated; the bishop's phelonion is adorned with many small crosses. Instead of this vestment the Greek metropolitans, and in Russia all bishops since the time of Peter the Great, wear the *sakkos*, a tight-fitting garment supposed to symbolize the seamless robe of Christ. The episcopal gloves, sandals, and ring are not in use. The head covering resembles a crown more than the Western mitre.

Anglican Usage. The Anglican communion, as a part of the Western church, has the same history in regard to vestments, subject to the same constitutional right to regulate vestments as a part of discipline. In the Reformation movement of the sixteenth century in England, which differs in essential features from the contemporaneous movement in Germany and France, an element of confusion was introduced by the influence of Lutheran and Calvinistic reformers. The continental reformers had assumed that vestments might be identified with doctrine and hence had reacted from Western custom. The disciplinarian Puritanism in the reign of Elizabeth concentrated itself against externals in liturgy and worship. Two parties accordingly sprang up—one holding to the general use of the Western church, the other desiring to abandon absolutely that use. The tendency of Queen Elizabeth in aiding the action of the Church was in favor of the Western system. The vagueness and indefinite character of legislation in the reign of Edward VI and the resulting doubt led to the setting forth of the so-called "Ornaments Rubric," which authorizes the "ornaments of the Church and of the ministers thereof as used by the authority of Parliament in the second year of King Edward VI." The contest, however, for the principle of distinctive dress for the clergy was at first, in the latter part of the sixteenth and the seventeenth centuries, fought out on the minimum of the surplice, and again, in the middle of the nineteenth century, in the Surplice Riots, principally in London. The principle of vestments being thus established, the character of such vestments was not pressed. The limited use of most of the Western vestments, and the more rapid restoration of the elaborate eucharistic and other vestments in connection with the Oxford movement of the nineteenth century, have illustrated the position in general of the Anglican communion as a national church and belonging to the Western Catholic church as distinguished from such sections as pay obedience to the Bishop of Rome. A simpler use, however, sprang up during these troubled centuries which has remained to a large extent. This use provides, for the general dress of the clergy, the surplice. With it are worn at certain offices the stole, while dignitaries—e.g., chaplains to bishops, canons in cathedrals, and members of university colleges of clergy—wear for choir offices the broad black scarf, and over it the hood indicating the academic degree of the wearer. The cope has in English cathedrals become an altar vestment, and is also worn by bishops at great state functions, such as the coronation of the sovereign. The more usual dress for a bishop of the Anglican communion in ordinary ministrations consists of a rochet with black or scarlet chimere, a development of the street dress or convocation

robes of earlier times in England, analogous to the original development of ordinary costume into ecclesiastical use. At present both the Western and local Anglican uses are followed, as one finds in other countries to some extent, e.g., in Spain, where the Spanish use prevails, but the Italian use is also found.

Protestant Usage. The universal tendency of the Reformers was naturally to dissociate themselves from the older Church by abandoning to a greater or less extent the ceremonies and vestments used by it. The Lutherans, however, showed a more conservative spirit than the others. Luther himself considered the matter one of indifference, and his followers for a long time retained most of the old vestments, even the chasuble being worn in Sweden and Denmark, where the Lutheran bishops also wear copes and pectoral crosses. But the Calvinists and other more extreme Reformers on the Continent abolished the older vestments completely and adopted the black Geneva gown, or *robe de Calvin*. This, which is nothing more than the ordinary dress of a scholar in the sixteenth century, with the white bands at the neck, has become a distinctive costume of Protestant ministers for officiating. In recent years there has been a notable tendency, especially among the Scottish Presbyterians, towards the restoration or adaptation of ancient customs, and surpliced choirs have been introduced among other "ritualistic" usages. The semimilitary costume of the Salvation Army officers may be referred to as in some degree illustrating the same tendency.

Monastic Costume. The principle of uniformity of dress to mark those who lived a common life was adopted even among the early monks of the Egyptian deserts. The character of the Eastern religious costumes was usually, as far as can be determined from the vague descriptions of early writers, such as to express a spirit of penitence and differentiate their wearers from the gayly dressed worldlings. The early Western founders, St. Benedict and even St. Francis, prescribed the general char-



FATHER ADAM SCHALL, S. J., IN MANDARIN COSTUME.

acter, but not the exact shape and color, of the garments to be worn by their followers. Custom gradually, in a community life, crystallized into rule. But since the thirteenth century the

founders of orders have usually laid down the exact details of the habit to be worn, as a sort of regimental uniform. The notable exceptions are St. Ignatius, St. Philip Neri, and St. Vincent de Paul, whose followers have never worn anything but the ordinary dress of secular priests. The wearing of the habit at all times is most strictly enjoined upon members of religious orders, except when it is sometimes dispensed with in non-Catholic countries; the early Jesuits in China, in pursuance of their policy of adapting themselves to the customs of the country, wore the native costume. (See illustration of Father Adam Schall in the dress of a mandarin.) Normally, however, the habit is always worn, taking the place for preaching (and in some places for administering the sacrament of penance) of the surplice and stole. For specific details of the costume of the various orders, see the articles under their titles.

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COSWAY, RICHARD (1742-1821). The most celebrated English miniature painter. He was born at Okeford near Bampton (Devonshire) and studied under Thomas Hudson, at several London drawing schools, and at the Royal Academy. He was the greatest miniature painter of his age and raised this art, which had fallen into disrepute, into universal favor. In 1785 he was appointed principal painter to the Prince of Wales and numbered the members of the fashionable world of London and Paris among his sitters. He amassed a large fortune and acquired a valuable collection of pictures and curios, but with his success he developed many eccentricities, which caused him to be often caricatured. He was the first to bring out the beauties of the ivory background in miniature painting; his color is brilliant, his brushwork of extraordinary delicacy and skill, and he expressed with consummate skill the rather artificial grace and charm which characterized the age. He made use occasionally of parchment and enamel as backgrounds. The largest collections of his miniatures are in Windsor Castle and in the J. Pierpont Morgan collection. Among the most celebrated are Lady Beechy (sold in Paris, 1912, for 18,000 francs); Mrs. Fitzherbert (Wallace collection, London); "The Prince of Wales as St. George" (Grimthorpe Castle); the artist's wife and daughter Angelica; Madame du Barry (Morgan collection); Lady Diana Sinclair; and the heads of the

so-called "Ancester Box," owned by the Earl of Ancester. His oil portraits and religious pictures are greatly inferior to his miniatures. In 1781 Cosway married Maria Hadfield, a well-known painter and etcher. Consult his biography by G. C. Williamson (London, 1905).

COT, kôt, PIERRE AUGUSTE (1837-83). A French painter. He was born at Bedarioux (Harault) and studied under Cogniet, Cabanel, and Bouguereau. He painted at first historical subjects in the academic style of his masters, later also portraits, and acquired great reputation, especially by his female heads. Among his most noteworthy works are: "Spring Time" (Brooklyn Museum); "Day of the Dead at the Campo Santo of Pisa"; "Dionisia"; "The Storm" (Metropolitan Museum, New York); "Prometheus"; "Mireille" (Museum, Montpellier).

COTA DE MAGUAQUE, ko'tá dá má-gwá'ká, RODRIGO (died c.1498). A Spanish poet of the fifteenth century, born at Toledo. His reputation rests upon the dainty, witty *Diálogo entre el Amor y un caballero viejo*, which appeared first in the *Canconero general* in 1511. The authorship of this poem has been much disputed, but it seems quite safe to attribute it to Cota. He was less certainly the author of *Las Coplas de Mingo Revulgo* (c.1472), and the attribution to him of the first act of the comedy *Celestina* (first known edition, Burgos, 1499, but certainly not the first edition) has been made on wholly unacceptable grounds. He also produced some satiric poems. Consult Foulché-Delbos's ed. of the "Épithalame burlesque," in *Revue Hispanique*, vol. i, pp. 69-72 (Paris, 1894), and remarks by Bonilla y San Martín in his *Anales de la literatura española*, pp. 164-167 (Madrid, 1904).

COTAN'GENT. See TRIGONOMETRY.

COTÉ, kôtá', AURELE SUZOR (1870-). A Canadian painter. He was born at Arthabaska, P. Q., and was educated at the Commercial Academy there. After some experience as a church decorator, he went to Paris in 1891 and studied under Bonnat and Lefebvre. He exhibited at the Salon in 1894, where his pictures "Pastourelle" and "Retour des Champs" were much admired, the former being admitted to the reward list. In 1898 his picture "The Death of Archimedes" won the grand prize. He was appointed an officer of the Academy by the French government in 1901, and in 1908 he was commissioned by the Dominion government to execute panel decorations and illustrations for the Parliament buildings, Ottawa. Among his best-known works are a portrait of Sir Wilfrid Laurier, for the Dominion Parliament buildings; "The Landing of Champlain at Quebec"; and "The Discovery of Canada by Jacques Cartier."

CÔTE-D'OR, kôt'dôr' (Fr., golden hill). A department in the east of France (q.v.), formerly part of the Province of Burgundy (Map. France, N., K 5). Area, 3393 square miles, pop., 1896, 368,168; 1901, 361,626; 1911, 350,044. The surface is in general elevated and is traversed by the Côte-d'Or ('golden hill'), which gives its name to the department and is so called on account of the excellence of the wines produced on its slopes. A great part of the department is covered with forests; there are mines of iron, coal, marble, and gypsum; stone is quarried; the valleys and plains are fertile, producing wheat, oats, barley, potatoes, and tobacco, and there is good pasture land, but the

peasants are not skilled in agriculture. Manufactures include iron, steel, machinery, bricks, leather goods, oil, and beer. Côte-d'Or is watered by the Seine, which rises in the northwest, and by several of its affluents; by the Saône; by the Arroux, a tributary of the Loire; and the Armançon. Capital, Dijon.

COTELIER, kô't'yâ', or **COTELERIUS**, JEAN BAPTISTE (1627-86). A French Hellenist. He was born in Nîmes, studied theology and philosophy in Paris, and in 1654 became counselor of the Archbishop of Embrun. He was appointed assistant librarian in the Royal Library in 1667, and in 1676 he became professor of Greek at the Collège de France. His principal publication, and one which made him widely famous, was his edition of the *Sanctorum Patrum qui Temporebus Apostolicis Floruerunt Opera Græce et Latine* (Paris, 1672).

COTENTIN, ANNE HILARION DE. See TOURVILLE, COUNT DE.

COTES, kôts, ROGER (1682-1716). An English mathematician and physicist. He was born at Burbage, in Leicestershire; was graduated at Trinity College, Cambridge; became a fellow in 1705; and in 1706, on the recommendation of Newton, Whiston, and Bentley, was made Plumian professor of astronomy. Cotes was editor of the second edition of Newton's *Principia* (1713). Various mathematical papers of his own, bearing on logarithms, trigonometry, and geometry, were published posthumously under the title *Harmonia Mensurarum* (Cambridge, 1722). The only independent publication of his own, during his lifetime, was his essay entitled *Logometria*. This treated of methods of constructing the Briggs logarithms (q.v.) and applied the theory laid down to the quadrature of the hyperbola and other problems. Several theorems are known by his name, e.g., to determine the harmonic mean between the segments of a secant to a curve of the n th order reckoned from a fixed point (see CURVE, CIRCLE); and also the well-known theorem of trigonometry: If A is any point on the radius OB of circle O , and if the circumference is divided into n equal parts $BP_1, P_1P_2, P_2P_3, \dots$ and into $2n$ equal parts $BQ_1, Q_1P_1, P_1Q_2, \dots$, the product $AP_1 \cdot 4P_2 \cdot AP_3 \cdot \dots$ (n factors) $= \pm (OA^n - OB^n)$, and $AQ_1 \cdot AQ_2 \cdot AQ_3 \cdot \dots$ (n factors) $= OA^n + OB^n$.

Cotes was held in the highest esteem by the scholars and scientific men of his time. Newton remarked of him: "If Cotes had lived, we might have known something."

COTES, SARA JEANNETTE DUNCAN (1861-). An English novelist. She was born at Brantford, Ontario, Canada, and was educated at the Collegiate School there. She found her way to the novel through letters and sketches contributed to newspapers and periodicals and made a brilliant success in *A Social Departure*, the observations of a tour round the world in 1889-90 with Mrs. Lilian Rood. In 1891 Miss Duncan married Everard C. Cotes, a press correspondent of Simla, India. Among her novels are: *An American Girl in London* (1891); *A Daughter of To-Day* (1894); *Vernon's Aunt* (1894); *The Simple Adventures of a Mem-Sahib* (1893); *The Story of Sonny Rahib* (1894); *His Honour and a Lady* (1896); *A Voyage of Consolation* (1898); *The Path of a Star* (1899); *The Other Side of the Latch*, the diary of an invalid in Simla (1901); *Those Delightful Americans* (1902); *The Pool in the Desert*

(1903); *The Imperialist* (1904); *Burnt Offering* (1910); *The Consort* (1912).

CÔTES-DU-NORD, kô't'-dy-nôr'. A department in northwest France (q.v.), formerly a part of Brittany, bounded on the north by the English Channel (Map: France, N. C 4). Area, 2787 square miles. Pop., 1896, 616,074; 1901, 609,349; 1911, 605,523. The Armoric hills, called also the Montagne Noire, and the Mene Mountains cross the department from east to west, giving a rude and broken aspect to the coasts. The chief rivers, which are short but navigable, are the Rance, Gouët, Trieux, and Arguenon. The cultivation of flax and hemp, with the pasturing of cattle, and iron, coal, and lead mining, supply employment in the mountainous districts; while in the sheltered valleys and on the coast levels grain, potatoes, flax, with pears and apples and other fruits, are produced. It builds ships, makes linen and paper, and is a noted horse market. Along the sea-coast are many large fisheries, and sardines are canned. Capital, Saint Brieuc.

COT'GRAVE, RANDLE (?-c.1634). An English lexicographer, born in Cheshire and educated at St. John's College, Cambridge. It was while secretary to William Cecil, Lord Burghley, that he compiled his French-English dictionary (1611, 1632, 1650, 1660, and 1673). The work contains many absurd errors, but is still much used by philologists.

CÖTHEN, or **KÖTHEN**, kē'ten. An ancient town of the German Duchy of Anhalt, situated on the Ziethe, about 22 miles north of Halle (Map: Germany, D 3). It is surrounded by high and ancient walls. Among its notable public buildings are the Jakobskirche, a Lutheran church of the Götline order, the church of St. James, with some fine old stained glass and a handsome organ, and the former palace of the dukes of Anhalt-Cöthen, now used as a museum and containing a library of about 20,000 volumes. Cöthen boasts a technical institute, a school of gardening, and a school of forestry. The chief industry is the manufacture of beet sugar; there are also iron foundries, machine works, boiler shops, and malting works; it also manufactures cigars, vehicles, and leather. Pop., 1890, 18,215; 1900, 22,100; 1905, 22,978. Cöthen was an old Slavic settlement, and received municipal privileges in the twelfth century. In 1547 it joined the Schmalkaldic League and was taken by Charles V. Until 1853 it was the capital of the Principality of Anhalt-Cöthen. A monument has been erected to Sebastian Bach, who was music director here 1717-23.

COTHUR'NUS. See BUSKIN.

COTIDAL LINES. A system of lines on a globe or chart which show the movement of the ocean tidal waves. The lines join the places where high water occurs at the same moment.

COTILLON, kô-tîl'yôn, Fr. pron. kô'té'yôn'. A dance of French origin and performed to quadrille music. It was a fashionable dance at the court of Charles X, where it had been adapted from a peasant dance. At first for one, then for two performers, it soon became a *ronde* dance, in which form it was introduced into England. There are hundreds of possible figures in the modern dance, and the accessories are most elaborate. The cotillon is begun by a small number of couples, who occupy the floor while the rest of the guests sit about the ball-room. These couples select others from among

those seated, and after going through a figure all take seats and are replaced by other couples until the whole company has danced that particular figure. Another method is for each set of couples to dance a different figure. For some account of the dance and descriptions of many of the figures, consult Grove, *Dancing*, "The Badminton Library" (London and Boston, 1895).

COTIN, kô'tân', CHARLES (1604-82). A French poetaster, born in Paris. He was royal counselor and almoner to the King under Louis XIV, and in 1655 was admitted to the Académie Française. His knowledge of Oriental and classic languages was extensive, and he was a member of the literary circle of the Hôtel Rambouillet. He was an abbé and a successful preacher. His verse, of which the *Poésies chrétiennes* (1657) are the most creditable, is of no importance. He is famous as the object of Boileau's ridicule (*Satires*, 3, 8, 9) and the original of Trissotin in Molière's *Femmes savantes*.

COTINGA, kô-tên'gá, or CHATTERER (native South American). A bird of the family Cotingidae, allied to the waxwings and manakins. Cotingas are numerous, both in species and individuals, inhabit tropical America exclusively, feeding on insects and fruit, and are remarkable for the splendor of the nuptial plumage worn by the males in many cases, or for eccentricities of ornament. The bell bird and umbrella bird, elsewhere described, are cotingas exemplifying such peculiarities, and the cocks-of-the-rock are included by some systemists. They have been specially studied by Dr. Leonard Stejneger, who refers to the group as follows in the *Standard Natural History*, vol. iv (Boston, 1885): "The greater number of the species of cotinga are plain-colored, gray, rufous, or greenish . . . though even among these rather modest forms there are some which are more or less highly adorned. Among these is the rose-breasted 'flycatcher,' or Xantus's Becard (*Platyparis aglaia albiventris*), with a beautiful crimson rosy patch on the breast, which just enters our fauna across the southern frontier. Nevertheless, the cotingas are, generally considered, especially bright-colored and curiously adorned birds. . . . From Central America we have the exquisite *Carpodectes*, white all over, with a delicate tinge of bluish gray washed over the upper surface: from Guiana to Brazil are found the deep purplish-carmine *Xipholana*, with white remiges, and the great wing coverts singularly lengthened, narrow and stiffened, like a woodpecker's tail feathers; the glorious cotinga, shining azure blue, with purple throat, from the same countries; the greenish, fork-tailed *Phibalura* from Brazil, and the small, pipra-like *Iodopleura*, curious on account of the rare lilac color of the sides of the body hidden under the wings." Of all these the females are plainly colored, mostly gray, and are therefore inconspicuous when making their nests or brooding—an important precaution against the extinction of the race; and the gaudy hues of the males are molted to a great extent during the off season, when their dress is much plainer than in the season of courtship. None of these birds are notable as singers, though several utter loud and singular cries. See Plate of COTINGAS.

COTISE, kô'tis, or **COST** (Fr. *côte*, side). In heraldry (q.v.), one of the diminutives of the bend.

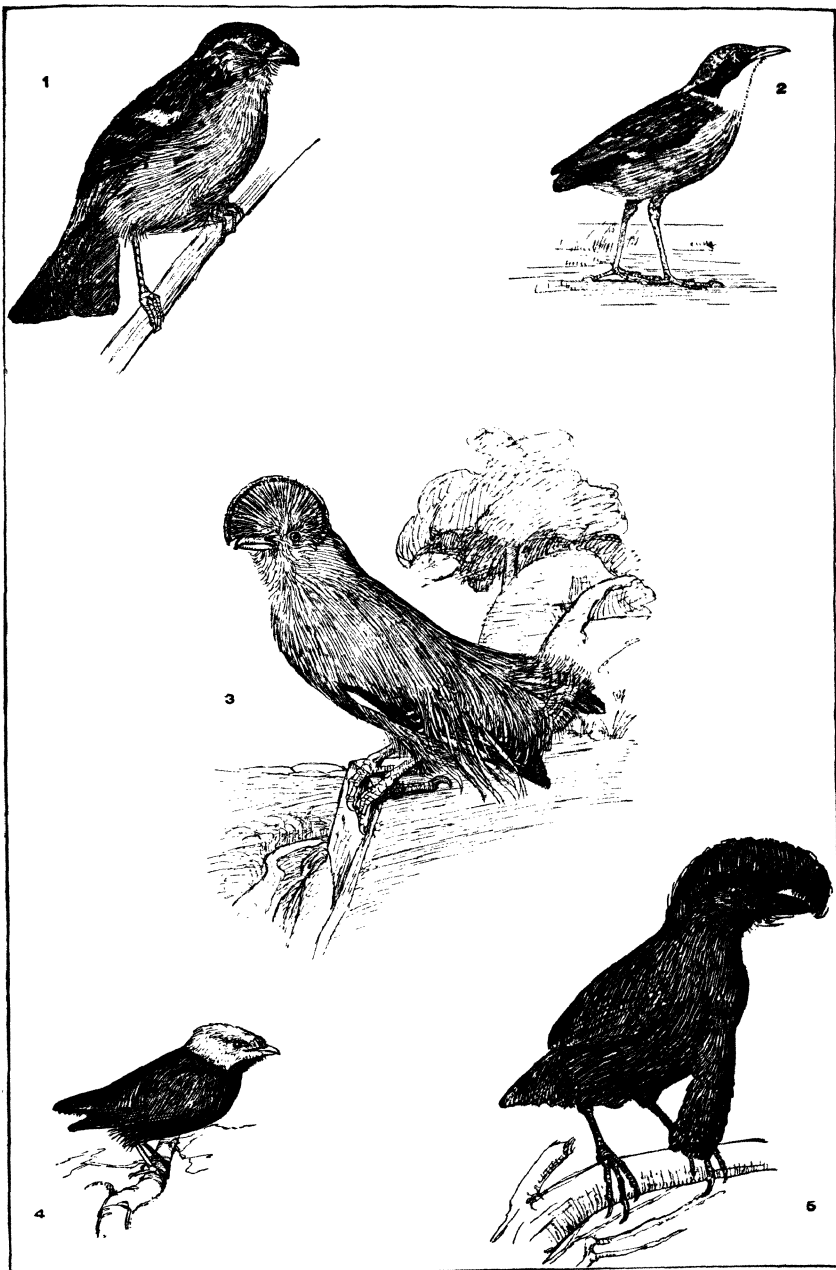
COTMAN, JOHN SELL (1782-1842). An

English landscape painter and etcher. He was born at Norwich, the son of wealthy parents, and in 1798 was sent to London. There he joined the group of water-color painters led by Girtin and Turner, but without adopting their naturalistic tendencies. Cotman is now more appreciated than when he was alive and is considered the most gifted artist, after Crome, of the Norwich school. In versatility he is equaled only by Turner, his draftsmanship is excellent, and his color is of unusual breadth and often very beautiful. The British Museum possesses nearly 300 of his water colors and drawings, including "Greta Bridge" and the famous India-ink drawing, "Breaking the Clod." Among his much rarer oil paintings are: "Wherries on Breydon" (National Gallery); "Fishing Boats off Yarmouth" (Norwich Museum); the "Waterfall," a fantastic landscape in classical style; an "English Village" and "Worcester Cathedral" in the Metropolitan Museum, New York. He is widely known through his architectural etchings: such as his *Etchings of Architectural and Picturesque Remains* (1838) and *Architectural Antiquities of Normandy* (1822). His sons Miles Edmund and Joseph John were able landscape painters, and his nephew Frederick George Cotman was an able painter in water color. Consult Binyon, *John Crome and John Sell Cotman* (London, 1906).

COTONEASTER (Neo-Lat., from Neo-Lat. *cotonea*, quince, Lat. *cotonea*, wallwort). A genus of plants of the family Rosaceæ, allied to the apple and quince. The species are shrubs or small trees, some of them evergreen, with simple, undivided leaves, more or less woolly beneath, small flowers in lateral cymes, and small fruit not agreeable to the palate, but the bright color of which, and its remaining on the tree in winter, make them very ornamental. These plants, while common in Europe, seem little known in the United States. Most of the species are natives of mountainous parts of Asia; they are sufficiently hardy for the climate of Great Britain, where they are among the most common ornamental shrubs.

COTOPAXI, kô'tô-pâk'sé, *Sp. pron.* kô'tô-pâ'né. The loftiest active volcano in the world. It is in Ecuador, in the eastern chain of the Andes, about 40 miles nearly south of Quito, and about 50 miles south of the equator, in long. 78° 42' W. (Map: Ecuador, B 4). La Condamine estimated the height at 18,860 feet; Reiss, the first to ascend it (in 1872), found it to be 19,500 feet; and Whymper (in 1880), 19,613 feet. The valley at its foot, however, is itself over 9000 feet above the sea. The upper part of Cotopaxi, a perfect cone for a distance of 4400 feet, is entirely covered with snow, with the exception of the immediate margin of the crater, which is a bare parapet of rock. The snow line on the northern exposure is 15,600 feet, and on the southern exposure 15,200 feet, above sea level. Reiss, whose measurements are largely accordant with the more recent ones of Whymper, estimated that the crater, which is elliptical, has a depth of 1500 feet and a maximum diameter of about 2600 feet. Below the snow line is a well-marked barren belt covered with lichens and shrubs, below which again is forest. Smoke issues from the summit; sounds as of explosions are occasionally heard; and, also, a fiery glow is often visible by night. Lava rarely flows even during eruptions, but flame, smoke, and immense volumes of ashes are

COTINGAS, ETC.



1. BAND-TAILED PLANT CUTTER (*Phytotoma rara*).

2. INDIAN PITTA (*Pitta brachyma*).

3. AMAZONIAN COCK-OF-THE-ROCK (*Rupicola rupicola*).

4. GOLDEN-CAPPED MANAKIN (*Pipra auricapilla*).

5. ECUADORIAN UMBRELLA-BIRD (*Cephalopterus penduliger*).

then ejected; and when the heat melts large masses of the snow lying on the sides, destructive floods are occasioned in the valleys beneath. The first eruption recorded was in 1532, and tradition makes a secondary cone, "the Luca's head" on the slope of Cotopaxi, the peak of the volcano blown off at this time. Others followed in 1698 and 1743, since which date numerous eruptions have occurred. One of the most violent was that of 1768, during which ashes, thrown high into the air, were transported by the winds and thickly strewn over an area of about 250 miles in diameter. The more recent violent eruptions were in 1877 and 1903.

COTRONE, kô-trô'nâ. An episcopal city (since the sixth century) on the Gulf of Taranto, southern Italy, 146 miles, by the winding railway, south of Taranto (Map: Italy, M 8). It has a castle of the time of Charles V, a cathedral, and an excellent, though small, harbor. Of the temple of Hera on Cape Colonne, sometimes called Cape Nau, 7 miles to the southeast, which was the most magnificent structure of the kind in Magna Græcia, only one solitary Doric column remains. The worship of Hera has been replaced by that of the Madonna del Capo, to whose church, near the temple, the young girls of Cotrone go in barefoot procession every Saturday. The town markets oranges and other semitropical fruit, oil, licorice, wine, olives, grain, and turpentine. Cotrone is the modern name for the ancient Crotona, founded by the Achæans about 710 B.C. About 530 B.C. Pythagoras, after being banished by Polycrates of Samos, established his brotherhood here and acquired such influence in the oligarchical council that the people rebelled, and expelled the Pythagoreans and established a democracy. Crotona suffered severely during the Pyrrhic wars (see PYRRHUS) and in the later years of the Second Punic War was Hannibal's headquarters for three successive winters. It did not appear again in history until the wars of Narses and Belisarius (q.v.) against the Goths. In the days of Herodotus, and long after, the medical school of Crotona was the most famous in the Greek world. This city has given many famous champions to the Olympian games of the Greeks, among them Milo. Pop. (commune), 1881, 9649; 1901, 9610; 1911, 10,162. See CROTONA.

COTS+WOLD. See SHEEP.

COTSWOLD, or **COTESWOLD HILLS** (village meadow, from *cot*, hut + *wold*, meadow). A range of hills, running through the middle of Gloucestershire, England, from Chipping Camden in the northeast to near Bath in the southwest, and forming the inner ridge of the English coastal plain (Map: England, D 5). They are 54 miles long, in some parts 8 miles broad, and cover 312 square miles, with an average height of 500 to 600 feet. The highest points are Cleave Hill (1134 feet) and Broadway Hill (1086 feet). The surface is generally bare, but corn, turnips, and sainfoin, a perennial herb cultivated as a forage plant for sheep, are grown, and coarse-wooled sheep are raised less for the wool than for their value in crosses with less hardy breeds. Consult Evans, *Highways and Byways in Oxford and the Cotswolds* (New York, 1905).

COTTA. The name of a family of German publishers, whose establishment was founded in Tübingen in 1659. It included the eminent theologian, JOHANNES FRIEDRICH COTTA (1701-79), and his grandnephew, JOHANN FRIEDRICH,

FRIEDRICH COTTA VON COTTENDORF (1764-1832), the most eminent publisher in German history. Educated for the law, he entered the book business at Tübingen in 1787 and in 1795 began to publish Schiller's *Horen*, the *Politische Annalen*, and an architectural annual. In 1798 he issued *Die Allgemeine Zeitung* (q.v.), the *Damalenmanach*, and other such publications. The *Litteraturblatt* and the *Kunstblatt* followed. Cotta was publisher for nearly all the distinguished literary men of the classical epoch. In 1810 he moved his printing house to Stuttgart; in 1824 at Augsburg he introduced the first steam printing press into Bavaria. In politics Cotta was a moderate but steadfast Liberal. He was a practical social reformer, abolishing serfdom on his estates, building model farms, and making them in effect neighborhood experiment stations. The house of Cotta is still among the greatest publishing firms in Germany, since 1899 a stock company in Stuttgart.

COTTA, BERNHARD VON (1808-79). A German geologist, born at Zielbach, near Eisenach. After studying at the School of Mines at Freiberg and at the University of Heidelberg, he was associated with Naumann in the publication of a geological map of Saxony (12 sections, 1833-42), and from 1841 to 1874 was professor of geology at Freiberg. His publications, many of which have been translated into English, include: *Geognostische Wanderungen* (1836-38); *Anleitung zum Studium der Geognosie und Geologie* (3d ed., 1849); *Deutschlands Boden* (1854); *Die Lehre von Erzlagern* (1854-61). *Die Geologie der Gegenwart* (5th ed., 1878). In the latter work he proved himself an evolutionist and an adherent of Darwin's theory of the origin of species. He was one of the first geologists to accept this theory and apply it to organic remains in sedimentary rocks. His treatise on ore deposits contributed greatly to the development of that branch of geology.

COTTA, GAIUS AURELIUS (c.124-73 B.C.). A Roman, distinguished as statesman and orator. He was an intimate friend of M. Livius Drusus, the champion of the people. (See DRUSUS, 2; SOCIAL WAR.) In 91 he sought unsuccessfully the tribuneship of the people. Soon afterward, by the terms of the Lex Varia, a law aimed at all who had supported the Italians against Rome, he was accused, and went into voluntary exile. He returned in 82. As consul in 75, he championed the popular cause by carrying a law freeing the tribunes of the people from legislation by which Sulla had disqualified them from holding higher magistracies. He died suddenly, in 74, from the breaking out of an old wound. Cicero praises him highly as an orator and makes him a participant in the dialogue of his *De Oratore* and his *De Natura Deorum*. Consult the introduction to Wilkins's edition of the *De Oratore* (2d ed., Oxford, 1888).

COTTA, HEINRICH (1763-1844). A German forester of distinction, born near Wasungen. He studied at Jena, in 1801 became a master forester and a member of the Eisenach College of Forestry, and from 1795 to 1811 conducted at Zillbach a school of silviculture founded by himself. In 1811 he was summoned to Saxony as counselor of forestry, and thither removed his school, which in 1816 received the title of "Royal Academy of Forestry." He wrote a number of volumes, including: *Systematische Anleitung zur Taxation der Waldungen* (1804); *Anweisung zum Waldbau* (1817).

9th ed., 1865); *Die Verbindung des Feldbaues mit dem Waldbau* (1819-22); *Hilfsatafeln für Forstwirte und Forsttaazoren* (1821; 2d ed., 1841); *Grundriss der Forstwirtschaft* (1832; 6th ed., 1872).

COTTABUS (Gk. *κότταβος*, *cottabos*). A game said to have originated in ancient Sicily, widely popular in Greece at dinner parties, in the fifth and fourth centuries B.C., especially at Athens. The purpose of the game was to throw wine at a mark, so that the wine should make a clear noise as it struck. In its simplest form a number of saucers were set floating in a crater or mixing bowl filled with water; the guests in turn, without rising from their places, flung wine at the saucers, seeking to sink them; the player who sank most saucers was the winner. Other more intricate forms of the game, in spite of many descriptions in Greek writers, most of which, however, were written when the game was no longer played, and the discovery, near Perugia, of two sets of apparatus used in playing the game, are not clearly understood. The game was much used as a love augury; the player, as he threw, named his beloved or thought of her and augured success or failure in his suit from the nature of his throw. Consult: Becq de Fouquières, *Les jeux des anciens* (1873); Helbig, *Mittheilungen des Kaiserlich Deutschen Archäologischen Instituts, Römische Athelung* (1886); Sartori, *Das Kottabos-Spiel der alten Griechen* (1893); Higgins, "Recent Discoveries of the Apparatus Used in Playing the Game of Kottabos," in *Archæologia* (1888).

COTTAGE (OF. *cottage*, ML. *cotagium*, from AS. *cot*, Icel. *kot*, hut). Formerly a term used in Great Britain for a small dwelling house of a poor family, especially in the country, detached from other buildings. It had no second story (though sometimes garret rooms) and was built usually of stone or brick and thus distinguished from wooden cabins or huts, though wood was not excluded. Recently the term has been extended to mean country houses of moderate extent, especially summer residences for well-to-do families; and finally it is often but improperly applied, in the United States, to the most sumptuous summer residences at places like Newport and Bar Harbor.

COT'TAR'S SATURDAY NIGHT, THE. A poem by Robert Burns, published with a volume of other verse in 1786.

COTTBUS, or **KOTTBUS**, *köt'bus*. A town of the Prussian Province of Brandenburg, situated on the Spree, about 70 miles southeast of Berlin. It has been noted since mediæval days for the manufacture of cloth, and to this has been added linen, wool, yarn, jute, carpets, tobacco, machinery, and beer. (Map: Germany, F 3.) A government tuberculosis sanitarium is just outside the town. Pop., 1890, 34,910; 1900, 39,327; 1905, 46,269. Cottbus was founded in the tenth century by Henry I. In 1445 it was sold to the Elector of Brandenburg. It belonged to Saxony from 1807 till 1813, when it passed to Prussia.

COTTE, *köt*, ROBERT DE (1656-1735). A French architect. He was born in Paris and was a pupil and brother-in-law of J. H. Mansard. As assistant to, and later as superintendent for, his master, he collaborated in the erection of the chapel of Versailles, the dome of the Invalides, and the Hôtel de la Vrillière (now the Bank of France). He appears to have designed the colonnade of the Trianon, and left

designs for the portal of Saint-Roch and for many buildings outside of his own country. De Cotte was made director of the Academy for Architecture in 1699, and first architect to the King (1708), after the death of Mansard.

COTTENHAM, *köt'en-am*, EARL OF. See PEPPYS, (CHARLES CHRISTOPHER).

COTTER, JOSEPH B. (1844-1909). An American Roman Catholic bishop, born in Liverpool. He came to America in his youth and was educated at St. John's University. After holding a pastorate at Winona, Minn., for 18 years, he was in 1889 consecrated first bishop of that diocese. He was active in the temperance movement and thrice president of the Total Abstinence Union of America.

COTTEREAU, *köt'rô'*, JEAN. See CHOUANS.

COTTET, *köt'a'*, (CHARLES (1863-). A French landscape and genre painter and etcher. He was born in Puy (Haute Loire) and studied under Maillart at the Académie Julian and under Roll. He at first joined the Impressionists and later helped to found the Société Nationale des Beaux-Arts. He is known chiefly as a painter of Breton subjects. A cycle of 10 landscapes, entitled "The Country of the Sea" (1905), several of which are now in the Luxembourg, attracted wide attention. He also painted many Venetian and Spanish subjects. In his early impressionistic work his color is light and delicate; later it grew darker and heavier, and an element of pathos was introduced. His paintings include "The Port of Camaret" and others, in the Luxembourg Museum; "Going to Church in Brittany" (Vienna); "A Moonlight Night" (Philadelphia); "Breton Women in Mourning" (Cincinnati).

COTTIDE (Neo-Lat. nom. pl., from Neo-Lat. *cottus*, Gk. *κόττος*, *kottos*, a sort of river fish, probably the bullhead). A family of small, ugly-looking, spiny-rayed fishes, having a large depressed head, usually armed with spines or tubercles, and a tapering body, which may be naked or irregularly armed with scales or bony plates. There are about 60 genera and 250 species. The typical genus is *Cottus*. Nearly all are small. They inhabit the rocky shores and pools of the northern regions, some of the species descending to great depths. Many inhabit fresh waters, occupying the clear, cool streams of northern regions. The family includes the sculpins, miller's-thumb, grubby, father-lasher, etc. Very few are used as food. See SCULPIN.

COTTIERS, *köt'ti-êr-z*. A term originally indicating tenants who rented cots or cottages, or at the most a plot of land too small to be designated a farm; but later the term had a more general application to peasant farmers whose rent was determined not by custom, but by competition. The most notable case of this system of land tenure was in Ireland, where the capitalist farmer was scarcely represented in the population. The same class in the western parts of Scotland are called "crofters." Among both the lack of capital and the competition for land, including rack rent, has provoked much misery. It has been partially alleviated in Ireland by the gradual diminution of the population, and still more by the acts of Parliament known as the "Land Laws." See IRISH LAND LAWS.

COTTIN, *köt'an'*, SOPHIE RISTEAU (1770-1807). A French novelist, born at Tonneins, and generally known to a now past generation as the author of *Elisabeth ou les exilés de Sibérie*, which

won the praise of imitation from Xavier de Maistre in *La jeune Sibérienne* (1825). Its translation in English by G. R. Lockwood (New York, 1869) is still popular among old-fashioned English readers. In France her vogue was not lasting. Her *Mathilde* (1805), a tale of an intense love between a Christian Crusader and a Saracen, may be considered as the precursor of the Romanticist novels of the Châteaubriand school, especially by reason of its very creditable local color. She died in Paris, Aug. 25, 1807, too early to fulfill the promises of an interesting and sympathetic genius. Consult Sainte-Beuve, *Causeries du Lundi*, vol. xi, and Julia Kavanagh, *French Women of Letters* (Leipzig, 1862).

COTTLE, JOSEPH (1770-1853). An English publisher, born probably in Gloucestershire. He opened a bookshop in Bristol and was instrumental in publishing some of the first poems of Southey, Coleridge, and Wordsworth. He remained in business from 1791 to 1799. After his retirement he produced several volumes of poetry, such as *Malvern Hills* (1798), *John the Baptist* (1801), *Messiah* (1815), which awoke the satire of Byron. His *Early Recollections, Chiefly Relating to Samuel Taylor Coleridge* (1837), with a second edition under the title *Reminiscences of Coleridge and Southey* (1847), contains interesting information on the early lives of Coleridge and Southey, but is disfigured by many details that show Cottle himself in an unpleasant light.

COTTON (Fr., *Sp. coton*, from Ar. *qūṭun*, *qūṭa*, cotton, from *qatana*, to inhabit). An important vegetable fibre, distinguished from all other fibres by the peculiar twist it possesses, which makes it exceedingly valuable for spinning. It is cultivated in those parts of the globe between the two thirty-fifth parallels of latitude (a region which contains the largest portion of the land surface of the globe), although its most profitable cultivation is between the twentieth and thirty-fifth parallels north of the equator. Within this belt lie the cotton districts of the United States, northern Mexico, Egypt, northern Africa, and Asia, except the extreme southern parts of India and the Malay Peninsula. South of the equator cotton is grown in Brazil, nearly all of which country is said to be favorably adapted to its cultivation. In Argentina; in Australia, though not to any great extent; in Africa, where efforts to extend its production are being made; and in the islands of the Pacific. Cotton is grown under wider range of climatic conditions, over a greater area, and by a greater variety and number of people, and is useful for a larger number of purposes, than any other fibre. Its cheapness and the extent of its production preclude the demand ever exceeding the supply except locally and temporarily. Although cotton is grown mainly for the fibre surrounding its seeds, its by-products, the seeds as a source of oil and cake, and also the fibre of the stalks, are of great importance. The cottonseed products of the United States in 1912 were valued at \$132,230,000. See COTTONSEED AND ITS PRODUCTS, and Colored Plate of FIBRE PLANTS in article HEMP.

Botanical and Commercial Classifications. The cotton of commerce is the product of a few species of *Gossypium*, a genus of the family Malvaceæ, to which also belong the hollyhock, mallow, hibiscus, etc., as may be readily seen

by a comparison of their flowers. (For illustration, see Plate with article HEMP.) There are numerous species of *Gossypium*, only three or four of which are economically important. They are small trees, shrubs, or herbaceous plants, and in their duration are perennials, biennials, or annuals. The leaves of the cultivated species are three to seven, or even nine, lobed, and are more or less sprinkled with small black or pellucid dots. The flowers vary in color, are white or light yellow, with purple spots at base, and are usually borne singly in the axils of the leaves except in the "cluster" type, where a number occur together. At their bases the flowers are surrounded by three or more green heart-shaped bracts, which constitute the "squares." The fruit, known as the boll, is a three to five celled capsule, containing the numerous seeds, more or less covered with lint, which is white or tawny. All of the species are of tropical origin, yet their most successful cultivation is in temperate climates where there is a period of six months free from frosts and where there is an abundant and well-distributed rainfall throughout the growing season.

The botanical origin of plants that have long been in cultivation is always a source of perplexity, and the exact species to which the different varieties of cotton belong has been the subject of much controversy. By almost common consent it is now agreed that most of the cotton of commerce is the product of three or four species and their hybrids. These species are *Gossypium arboreum* and *Gossypium peruvianum*, arborescent species grown only in the tropics, *Gossypium barbadense*, the source of the celebrated Sea Island and Egyptian cottons, and *Gossypium herbaceum*, the species from which most of the crop of India is grown. The American upland cotton is believed to have originated from *Gossypium hirsutum*. There is perhaps no other plant that responds so quickly to changes in environment and improved cultivation, and to this are doubtless due the many varieties and species.

The Sea Island and Egyptian cottons, *Gossypium barbadense*, with their beautiful, long, and silky staple, are among the most valuable of the races or species of cotton. The flower is of a rich cream color, and its seeds are black, small, and easily separable from the lint. This species attains the highest perfection along the coast region of South Carolina, Georgia, and Florida, with well-known varieties grown under irrigation in Egypt from American seed. The fibre of Sea Island cotton averages about 1½ inches in length, with 1½ to 2½ as the extremes. It is adapted to the finest thread and lace work, and other products for which the short staple is not suited. The Egyptian varieties are usually a little shorter in staple and are of a tawny color. These are often used for the natural-colored balbriggan underwear, hosiery, etc., where a smooth finish and silky lustre are desired. The cultivation of Sea Island cotton is highly developed, and the United States crop of 1912 was 73,777 bales of 382 pounds each. The value of the Sea Island cotton crop is about 5½ million dollars annually. The Department of Agriculture has in recent years imported a quantity of seed of the Egyptian cotton and by a series of experiments demonstrated the feasibility of its production. The quantity of Egyptian cotton imported in 1913

was approximately 100 million pounds, valued at about \$20,000,000. Most of this comes direct from Egypt, but a small part from England.

The upland cotton of the United States is mostly derived from *Gossypium hirsutum*. In this country the varieties of this species have white flowers, which turn red the second day after opening. The fibre of this series is shorter, but the plant can be cultivated over a much greater extent of territory than the others. The seed of the upland varieties is usually of a greenish color and has a closely adherent gray fuzz in addition to the longer lint, making the process of ginning more difficult. There are doubtless many hybrids between these series, as may be seen in the character of some upland cottons. In 1896 descriptions were published in the United States Department of Agriculture, Office of Experiment Stations, *Bulletin 33*, of more than 130 varieties of cotton in cultivation in the United States at that time, together with about an equal number of so-called varieties which were only old ones renamed. Most of these varieties were upland cottons, and they varied widely in their production and character of lint. *Gossypium arboreum* is a small tree rather common about the temples of India and China, and also grows wild in Abyssinia and Senegal, but it is said never to be cultivated as a regular crop. The trees are rather short-lived, and they yield a fine, silky fibre an inch or more in length. This is called Nurma or Deo cotton and is little used except by the priestly class. It is probable that its value has been overrated. It will not mature in the United States. The origin of the cottons supposed to be derived from *Gossypium peruvianum* is somewhat in doubt. They are South American, as their name would indicate, and their smooth black seeds adhere in a reniform mass, hence the name "kidney cotton," which is usually applied to them. Their fibre is strong, rather coarse and woolly, $1\frac{1}{2}$ inches or less in length, and from its great resemblance to wool is frequently used in combination with that staple. About $4\frac{1}{2}$ million pounds, valued at nearly \$1,000,000, are annually imported into the United States, and it is claimed that most of it is used by woolen manufacturers to mix in making underwear, hosiery, etc., much of the material being sold as all-woolen goods.

In commercial usage, to fibres under 0.98 inch, or 25 millimeters, in length there has been given the name "short staple"; "medium" means from 0.98 to 1.17 inches (25 to 30 millimeters), and "long," 1.18 to 1.57 inches (30 to 40 millimeters); "extra," including those which are 1.58 inches (40 millimeters) or more. The extra and the long in the United States seem to come from Sea Island cotton or some of its hybrids; the short and medium from *Gossypium hirsutum*.

The commercial classification of cotton in New York is as follows: The "full grades" are fair, middling fair, good middling, middling, low middling, good ordinary, and ordinary. Half grades are designated by the prefix "strict," quarter grades by prefixes "barely," meaning the point above half grade and the next full grade above, and "fully," meaning the mean point between the half grade and the next full grade below. Liverpool high grades are lower, and low grades higher, than New York. Acting under authorization from Congress, the United States Department of Agriculture established

nine grades of cotton based on middling cotton. They are: middling fair, strict middling, good middling, strict good middling, middling, strict low middling, low middling, strict good ordinary, and good ordinary. Standard sets of these grades have been prepared, and they have been officially adopted by the leading cotton exchanges of this country.

Cultivation. The plant requires for its best development a peculiar soil and climate. While the method of cultivation is about the same in the various countries where it is grown, that in the United States is the most perfect. Although the plant is not really an annual, and in the tropics it can be grown as a perennial, yet it is treated as an annual in its cultivation in most countries. The land is prepared in winter or early spring, the time of beginning varying with the locality. After thorough plowing, and after all frost has gone, the ground is bedded into rows from 3 to 4 feet wide, according to situation and the quality of the soil, the seed is sown along the centre of these beds, either in a straight furrow made with a small plow or opener, or in holes 12 to 18 inches apart. Flat culture is also used. Where artificial fertilizers or cottonseed meal is drilled in, this method of preparation is indispensable. The usual date to begin preparing land is from January 15 in southern Texas to March 5 in South Carolina. Sowing usually commences March 10 to April 15 and continues to May 15; but late spring frosts may delay it longer. The young shoots, which appear in from 10 to 15 days, are weeded and thinned when they have attained a height of 2 to 6 inches, say, when the third or first true leaf appears. The average date of bloom is June 5. As a general rule, cotton is a dry-weather plant, heavy rainfall interfering with both the culture and the stand, although an extremely dry spring interferes with the growth. For plowing it is best to have just enough rain to make the soil moist and spongy. When young, the crop flourishes best with warm steamy weather, with an occasional shower until blooming. An excess of rain produces weeds and wood; severe drought stunts the plant, matures it too early, and causes a small light-stapled crop. Early frost causes the plant to turn brown; cold nights cause many of the plants to die. Lands in hilly or upland districts require more moisture than those lying in the plains and river bottoms. Overflowing often causes injury on bottom and flat prairie lands, but replanting or recuperation often redeems the most hopeless cases. Where, however, overflowing causes "sanding," the land is rendered utterly useless for cotton culture that year. The experiment stations in the Southern States have aided in introducing improved methods of cultivating, fertilizing, and handling the crop. Rotation of crops and green manuring have been shown to be of great advantage. From the date of bloom, warm, dry weather is needful, until picking time, which usually commences from July 10 in southern Texas up to September 10 in Tennessee, and continues until frost puts a stop to further growth. During the harvest all available hands are called into full employment. The cotton is gathered into baskets or bags hung from the shoulders of the pickers, and as the crop is secured it is either sent directly to the gin or dried, and then the fibre separated from the seeds. Recent investigations have

shown the quality of the fibre is improved by storing cotton for a time before ginning. For long-staple or Sea Island cotton in South Carolina the usual date to begin preparing land is February 1; planting begins April 1 and ends May 1; picking is from August 25 to December 10.

The occurrence of the cotton-boll weevil over much of the cotton area has caused some modification in the growing of the crop. Clean cultivation, earlier planting, wider spacing, and the use of early maturing varieties are recommended for infested regions.

Insect Enemies of the Cotton Plant. See COTTON INSECTS.

Cotton Diseases. There are a number of well-characterized diseases of the cotton plant, some of which are due to disturbances in the nutrition of the plant, others are caused by fungus attacks, while still others are attributed to the presence of minute worms, called "nematodes," in the roots. Attention to the requirements of the plants will correct the first class of diseases. For the fungus troubles but little in the way of prevention is known. Among the most important diseases due to physiological causes are those known as the "mosaic disease," or "yellow leaf blight," and the shedding of bolls. In the first, small areas of the leaves become yellow, giving to the leaf a peculiar checkered appearance. Later these areas turn brown and dry up, leaving the leaf in a more or less ragged condition. At this stage the disease is usually referred to as the "black rust." Heavy applications of kamite or similar fertilizer are said to correct this evil. The shedding of the bolls, or their drying up while still attached to the plant, is often a serious trouble. Extreme dry or wet weather causes this disease by interfering with the proper supply of moisture and nutriment furnished the plant through its roots. Among the diseases due to parasitic fungi a few of the most serious and widely distributed may be mentioned. Damping off, sore shin, or seedling rot is caused by *Pythium debaryanum* and a number of other fungi. They attack the young plants at or near the surface of the ground, producing ulcer-like spots, and later rot the plant off. The sunken, ulcer-like spots can be readily seen on the affected stems. Another common disease is anthracnose (q.v.), due to *Glomerella*, or *Colletotrichum gossypii*. It is a widely distributed fungus that attacks the bolls, stems, and leaves, and is probably the most destructive of cotton diseases. Upon the bolls small reddish spots appear which later become black. The centre then becomes gray or pink, and the spots enlarge in a concentric manner with well-marked zones of color. The boll is killed outright or has its development checked so that the lint is worthless. Upon the stems the fungus is somewhat similar in its behavior, although the spots are not quite so definitely marked. Upon the leaves the disease is not very well characterized. Cotton anthracnose is carried with the seed, and it may be prevented by the use of good seed and rotation of crops. A root rot is very destructive in some places. Its behavior is so marked as to need no description. It is due to a rather widely distributed fungus that has been called *Oomium auricuum*. It attacks a number of plants in addition to cotton. Rotation of crops is about the only method of relief known. A leaf blight (*Sphaerella gossypina*) and a mil-

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dew (*Ramularia areola*) are common diseases in the cotton field, but they seldom occasion much injury.

Another of the serious fungus diseases to which the cotton plant is subject is the wilt disease. It makes its appearance usually in May, when the plants are 6 or 8 inches high. The plants are dwarfed, have an unhealthy appearance, the leaves turn yellow between the veins, and their margins dry up. Sometimes plants wilt and die at once, while at other times the progress of the disease is slower and the plant may partly recover. A plant attacked by this disease will show a brownish stained color in the wood when cut across. The cause of the trouble is a fungus, *Fusarium vasinfectum*, and the same or a closely related form occurs on the okra and watermelon. Some varieties and individual plants seem less liable to this disease, which attacks the plants through the soil, and it is thought the means for overcoming this trouble lies in resistant plants. This disease, as well as some others, is very much complicated by the presence in the roots of the cotton of nematodes (*Heterodera radicola*), minute worms that enter the roots of cotton and a number of other plants, causing a large number of galls to be formed. The plant is injured by the nourishment being taken from other parts of the plant to make the galls. This weakens the plant so that it is more liable to fungus attack. When nematodes occur in abundance in the field, no entirely efficient means of eradication is known as yet.

Production and Distribution. The oldest-known cotton-producing country is India, where for 30 centuries the plant has been grown and its fibre manufactured. For 400 years before the Christian era cotton was well known in what was then the civilized world, the writings of the Greeks and Egyptians plainly indicating the knowledge of the value of this fibre. Columbus found it in the Western world, although not so extensively cultivated as in the East; but during the past 50 years its culture here has distanced in quantity and in quality the produce of the Old World. Down to 1800 the cotton consumers of Europe depended upon the Indies and the Levant for their raw material; but by 1860, so far had the inventive genius, the superior farming, and the greater energy of the planters of our Southern States pushed the production of the fibre, that they furnished the greater part of the cotton used by Great Britain and the continent of Europe. From 1858 to 1860 America furnished 79 per cent of the cotton imported into Great Britain. During our Civil War this dropped to 3½ per cent, rising to 58 per cent in 1871, and amounting to 80 per cent in 1900 and 62.8 per cent in 1912. During the Civil War, when the price of cotton was abnormally high, attempts were made to grow cotton in many countries. The industry flourished there for a while, but it has ceased to be profitable in Europe, Australia, etc. Russia in her Asiatic possessions has developed cotton growing greatly in recent years, so that the imports into the Empire have fallen off 50 per cent in the past decade. Great Britain, Germany, and France are making especial efforts to develop cotton growing in Africa, and in 1912 nearly 60,000 bales were produced in their colonies, mostly in Africa.

Cotton Production of the World. This is difficult to state except approximately, as a large

proportion and amount consumed is produced in uncivilized or in semicivilized countries, where no accurate record is kept; and in many countries and districts absolutely no data are available—as in China, where soil and climate are favorable and the clothing of the population is largely of cotton, yet the extent of its cultivation is a close secret; and in some parts of India, where the production can be estimated only by the amount in sight and the known or assumed requirements for dress. The amount produced in the vast unknown continent of Africa is even more of a mystery, although native cottons form there a large proportion of the dress.

The world's production of cotton has increased more rapidly in recent years than that of any other of the chief materials of clothing, wool, silk, or flax, and the growth in world consumption has been far greater than that of population. The total cotton production of the world in 1850 was approximately 3 million bales, in 1900, 12½ million, and in the cotton year 1911-12, 25 million, the production of 1912 being practically double that of 1900 and fully eight times that of 1850. As the world population increased but about 50 per cent from 1850 to 1912, while cotton production increased 700 per cent and that of wool about 200 per cent, it is apparent that the popularity of cotton as an article of clothing has greatly increased.

Cotton in the United States. The first authentic record of cotton cultivation in the United States was at Jamestown, Va., in 1607. The first exportation was in 1747, when eight bags were sent to England, the first shipment of any importance being 2000 pounds in 1770. In 1791, 189,316 pounds were exported; Whitney's invention of the saw gin in 1793 raised this amount to 17,789,803 pounds by 1800. The production reached 1,920,000,000 pounds in 1860; 3,178,000,000 in 1880; 5,133,000,000 in 1900; 6,840,000,000 in 1904, and 7,157,000,000 in 1912. Cheapening the processes of cultivation and cleaning, and increase of acreage, have so lowered the cost of the fibre that while the average price in Liverpool was 1s. 6d. (say,

of a million in 1864, against 4½ millions in 1861. In 1867 there was a decline from the high prices consequent upon the Civil War to 7½d. (14½ cents), but in a few months it reached 1s. 1d. (26 cents). In 1890 it ranged from 5½d. to 6½d. in Liverpool, and from 10½ cents to 12½ cents in New York. From 1891 to 1901 prices were low, falling to an annual average of 5.94 cents per pound in New York in 1898, advancing to 11.18 cents per pound in 1911 and an annual average of 15.11 cents per pound in 1910—the highest record since 1875. In 1912 the average price of middling cotton in New York was 11.52 cents and in 1914 about 12.4 cents.

The acreage and yield of cotton, including linters, for the season of 1912, as reported by the United States Bureau of the Census, were as follows:

STATE	Acrea	Running Bales
Alabama	3,730,000	1,367,136
Arkansas	1,991,000	805,021
Florida	224,000	60,248
Georgia	5,335,000	1,888,963
Louisiana	929,000	392,720
Mississippi	2,889,000	1,049,604
North Carolina	1,545,000	935,080
Oklahoma	2,665,000	1,057,125
South Carolina	2,695,000	1,259,672
Tennessee	783,000	289,731
Texas	11,338,000	4,888,623
All others	159,000	96,850
Total	34,283,000	14,090,863

The accompanying Table No. 1, taken from *Bulletin No. 116, United States Census Bureau*, gives the cotton crop in the United States by States, according to censuses of 1870, 1880, 1890, 1900, and 1910 for the crops of the preceding year. The bale measurement of 1910 was 502.6 pounds; in 1890 it was 477 pounds; in 1880 it was 433 pounds; in 1870 it was 440 pounds. The early settlers north of the Ohio River planted cotton for domestic uses between 1749 and 1780. The census for 1860 gave for Illinois 1482 bales, or 659,490 pounds, of cotton.

TABLE I

COTTON GROWN IN THE UNITED STATES IN THE YEARS 1869, 1879, 1889, 1899, AND 1909 IN BALES

STATE	1869	1879	1889	1899	1909
Alabama	429,482	699,654	915,210	1,095,329	1,065,377
Arkansas	247,968	608,256	691,494	711,739	718,117
Florida	39,789	54,997	57,928	56,875	62,936
Georgia	473,934	814,441	1,191,846	1,300,184	1,901,830
Louisiana	350,832	508,569	650,180	713,929	269,573
Mississippi	564,938	963,111	1,154,725	1,257,772	1,109,580
North Carolina	144,935	389,598	336,261	477,070	649,886
Oklahoma*		17,000	34,540	212,010	573,786
South Carolina	224,500	522,548	747,190	881,192	1,164,309
Tennessee	181,842	330,621	190,579	215,068	253,397
Texas	350,628	805,284	1,471,242	2,556,413	2,554,520
All others	3,148	41,280	22,326	29,605	62,898
Total	3,011,996	5,755,359	7,472,511	9,507,786	10,386,209

* Includes Indian Territory.

36 cents) per pound in 1793, it was 5½d. (say, 11½ cents) in 1851; averaging 7d. (14 cents) for the five years ending 1861. During the period of the Civil War in the United States the prices were very high owing to the small production, the quantity produced being less than half a million bales in 1863 and but about one-fourth

Among the States classed as "all others" are Missouri, Virginia, California, Kansas, Arizona, all of which are producing cotton in commercial amounts, and a number of other States where its cultivation as a crop has been abandoned. Stimulated by the high prices following the Civil War, the cultivation of cotton was con-

ducted to a limited extent in California, Illinois, Indiana, Nevada, Utah, and West Virginia. With the coming of low prices cotton culture gradually disappeared from those sections not peculiarly adapted to it, and censuses after 1870 credited none to Illinois, Indiana, Nevada, Utah, or West Virginia. Natural selection continues to eliminate the industry from sections less favored by climatic conditions. To illustrate: Kentucky is credited by the censuses of 1880 and 1890 with 1367 and 873 bales respectively, but the census of 1900 finds in this State only 84 commercial bales. The loss in those States lying along the northern border of the cotton belt is more than offset by the increase found in the territory west and southwest of the Mississippi River. According to the eleventh census 2,872,524 bales, or 38 per cent of the entire American crop of 1889, was grown in that region, while in the census of 1900, in the same territory, the production reached 4,250,940 bales, or 45 per cent of the whole crop. In 1912 the States of Arkansas, Louisiana, Oklahoma, and Texas, all west of the Mississippi River, produced 7,169,604 bales, or 62.3 per cent of the entire crop.

The exports of cotton from the United States averaged less than 2 billion pounds per annum in the decade ending with 1880, and between 2 and 3 billions per year up to 1895. During the next decade the exports averaged over 3 billion pounds per annum, and from 1907 to 1914 averaged over 4 billion pounds per annum, the quantity exported in the fiscal year 1911 being 5,535,125,000 pounds, the high record up to that date, and in 1913 was 4,562,926,000 pounds. The high record in value of exports was in 1911, being \$585,318,869, that of 1913 being \$547,357,195. The exports to the principal countries in 1913 were to Great Britain, \$224,783,457; Germany, \$144,175,157, France, \$64,137,024; Italy, \$30,169,663, and Japan, \$25,022,050. The imports of cotton for 1913 were valued at \$22,987,318, of which \$18,753,197 was imported direct from Egypt, and between one and two million dollars' worth of Egyptian cotton from England. For the same fiscal year the exports of cotton goods were valued at \$53,743,977, and the imports at \$66,065,857, of which \$35,776,301 was laces, embroideries, and other articles of this character.

The amount of cotton consumed by all the mills in the world for the year ending Aug. 31, 1913, was approximately 21,000,000 bales. At the same date there were 30,590,553 active spindles in the United States, 11,971,092 of which were in the cotton-producing States and 18,619,461 in all other States. The consumption of domestic cotton in the United States for the above period was 5,786,061 bales. About one-third of the cotton grown in the United States is consumed in domestic manufactures, and about two-thirds is exported, chiefly to Europe.

Manufacture. The process of transforming cotton from its raw condition into the thread or cloth that is such an essential of daily life is one which involves many different operations. It must first be cleaned to remove sand, dust, and other foreign substances. It then contains about two-thirds of its weight in seeds, which must be removed.

Cotton Ginning.—Before Eli Whitney's invention of the cotton gin, the removal of the seeds by hand was so difficult a task that very little cotton was raised. It would take one person

two years to turn out an average bale of cotton, 3 to 15 of which are produced by one machine in one day. Before the Civil War the gins were run chiefly by mule power, which, when operated in connection with slave labor, was cheaper than steam. Whitney's cotton gin, known as the saw gin, may be briefly described as a series of circular saws with fine teeth, revolving with an arc of their circumference projecting through a guide into a receptacle for seed cotton. These saws tear the lint from the seed and carry it through the guide. It is removed from the saws by a brush and carried to a condenser. Great care must be exercised not to injure the cotton (1) by having the saws too close to the bars of the grate, so as to rub, (2) by having them revolve too fast, or (3) by having the teeth too sharp. The roller gin is growing in favor among cotton producers, especially for the long-staple or Sea Island cotton, and in the United States and Egypt all long-staple cotton is ginned in this way. It removes the seed with only one-fifth the rapidity of the saw gin, but it does not injure the fibre. In a primitive form it has been used in Egypt and India for many centuries. It consists of two rollers, revolving in opposite directions, between which the cotton is passed and the smooth, hard seeds thrown off. Both the saw gin and roller gin have been much modified and their effectiveness increased by successive improvements.

In 1912 there were 28,358 ginneries in the United States, 25,279 of which were reported as active by the Census Bureau. The average output was 535 bales, a somewhat lower average than that of 1911, but a decided increase over the average for the preceding five years. The number of idle ginneries was 3079, or 203 more than in 1911. While the crop of 1912 was somewhat less than that of 1911, yet it would seem from the steady increase in the number of idle gins that the process of ginning is being gradually concentrated in the larger establishments.

In *Bulletin No. 58*, on Cotton Ginning, Twelfth United States Census, Daniel C. Roper divides cotton ginneries into three general classes: Those conducted exclusively for the public, those conducted exclusively for the plantation, and those conducted for both the public and plantation. The *Bulletin* states that "the rapidity with which the private or plantation ginneries have been supplanted by public and more modern equipments is noteworthy. Through inquiries of the census of 1880, covering the power and machinery of cotton-ginning establishments, it was ascertained that a large percentage of the crop of 1879 was handled by ginneries of a private character. The motive power of these ginning and baling plants consisted of horses or mules, and each had a daily capacity of from three to five bales. The general introduction of steam power brought economic methods that have crowded out primitive horse ginneries to such an extent that they are now curiosities."

Baling.—The cotton having been separated from the seed, the next step is to pack it in bales for shipment. Different methods of baling prevail among the cotton-producing countries. The American product, as put up in the old-fashioned tortoise-back bales, has the reputation of being the worst-baled cotton in the world. East Indian cotton is shipped in cubical

bales, weighing about 400 pounds, covered with thick Indian hemp and held together with strong iron bands. The Egyptian bale weighs about 700 pounds, is a little thicker and not so long as the American, and has 11, instead of 7 or 8, bands around it. Brazilian cotton comes in very light bales, weighing only 200 pounds, which are tied with trailing vines. In the cotton States of America the cotton which is not consumed by the Southern mills is shipped to the exporting city by rail, steamboat, or wagon. It is there graded by the exporter, who fastens a tag to each bale and also to a sample taken from it. It is from these labeled samples that the foreign manufacturer makes his purchases. The bales are then subjected to enormous pressure, usually by the transportation company, to reduce the size of the export bale, a standard bale weighing 500 pounds. During its progress from the farm to the factory a bale of cotton is given a series of brands, by the farmer and the ginnery, as well as the exporter, so that fraud can easily be traced. One of the objections to the American baling methods, however, is that the covering becomes so torn that the marks on it cannot be deciphered.

The manner in which American cotton is generally baled and pressed for transportation to the markets and mills is not only needlessly expensive and wasteful, but fails to protect the cotton from damage and theft. The bales are covered with jute cloth, made of thread so coarse and loosely woven that, while it adds unnecessarily to the weight of the bale, it does not protect the cotton. The bales are held together by steel bands, which still further increase the weight. The weight of the bagging and ties on a bale weighing 500 pounds is about 23 pounds. Besides the increased freight rates due to this bulky method of baling, the necessity of a second pressing, and the bad condition in which the cotton reaches the factory, a more grave defect is its excessive inflammability, resulting in high insurance charges. So great is this risk that on some passenger steamers cotton is not carried, on account of the danger of fire. An illustration of this danger was afforded by the terrible fire which occurred on the docks of the North German Lloyd Steamship Company at Hoboken, N. J., on June 30, 1900. The fire started in some unknown manner in a lot of cotton bales and spread with such rapidity that efforts to check it were unavailing. The loss of property caused by this cotton fire has been estimated variously at from \$4,000,000 to \$6,000,000, and the loss of life was about 200 persons.

Some years ago a cylindrical bale was devised that is made directly from the gin. This seemed to meet with favor for a time, but the census reports show a diminishing number of round bales, only 99,916 such bales being reported for the crop of 1913. The American Cotton Company makes a bale 4 feet long and 2 feet in diameter, weighing over 35 pounds per cubic foot. The cotton is pressed gradually, so as not to injure the fibre, and is in the form of a continuous lap or roll. Since the air is pressed out of the cotton, it has no tendency to expand, and the covering is only sufficient to keep the cotton clean. The heavy bagging and ties are entirely dispensed with. The cotton is compressed as fast as ginned and is shipped direct from the ginhouse to the warehouse or mill. The cylin-

dric bale of the Planters' Compress Company is 36 inches long, 18 inches in diameter, and weighs 250 pounds. This bale is held together by wires passing from end to end through a small opening in the centre. It is covered with cotton duck, and the weight of the cloth and wire is about three pounds per bale. Most satisfactory tests have been made with each of these types of bales, showing that they are both fire and water proof. The other objections to the old-fashioned methods of baling are also met by the cylindrical bales described. The reason for the failure of the round bale to be more widely adopted is not evident.

Spinning.—When the cotton bales are received at the factory, the cotton from the different bales is first mixed in order that the yarn produced may be of uniform quality. It is next submitted to a process of opening and picking that loosens the fibres which became closely packed together when the bale was pressed. Then follow the processes of *carding*, *drawing*, *slubbing*, *roving*, *spinning*, and *doubling*, by which the cotton fibre is reduced by successive stages from a web or sheet into cotton yarn. The process of carding is described under that title. Its object, besides cleaning the cotton of any foreign substances still adhering, is to reduce the lap into a thin fleece and then contract it into a ribbon or sliver. The sliver, after being doubled so that inequalities in the single slivers are counter-balanced, is put through a drawing machine, consisting of successive pairs of rollers, each of which revolves more rapidly than the preceding one, and which reduces the sliver to a finer and finer thread. By slubbing and roving, the process of attenuation is continued, the thread in each case taking the name of the machine through which it has just passed. The thread is also twisted, and when it leaves the roving machine it is strong enough to be wound on a bobbin. Spinning is the concluding process, and in this the thread is given the requisite firmness and twist. Doubling is the combining of two or more threads into a single cord. Every step in the manufacture of cotton yarn has for its object (1) the removal of finer and finer impurities, (2) the attenuation and strengthening of the thread, (3) correcting the mistakes of the preceding process. The whole process is described in more detail in the article **SPINNING**.

The thread may be subjected to the additional processes of *gassing* and *polishing*. The object of gassing is to singe off all the loose fibres and so produce a very smooth yarn. This is accomplished by passing the thread through a very fine jet of gas, as it is wound from one bobbin to another. The yarn is polished by applying a sizing made of starch, beeswax, or other materials. This not only gives the yarn a gloss, but increases its strength and weight. The process of weaving cotton into cloth does not differ materially from that of silk and wool and is treated in the article **WEAVING**.

The bulk of the world's cotton is shipped into foreign countries and often across the ocean twice—once to the factories to be transformed into yarn and cloth, and again, perhaps, back to the very region where it was first raised, in the form of cotton goods. The best example of this fact is offered by the United States, which raises nearly three-fourths of the world's cotton, yet in 1911 exported less cotton goods, measured by values, than the Republic of Swit-

zerland, which raises not a pound of cotton and has not even a seaport. Of course the United States is an enormous consumer of cotton, one-third of its large crop being consumed by its own mills, and this fact must be remembered in considering the extent of her export trade. Obviously the amount of cotton goods imported,

TABLE II

VALUE OF THE WORLD'S EXPORTS OF COTTON GOODS BY COUNTRIES

(From *Bureau of Census Bulletins*, 106, 110, 113, and 115)

COUNTRY	1909	1910	1911
Austria-Hungary	\$13,257,962		\$18,153,373
Belgium	54,004,530		62,367,303
France	64,619,295	\$63,768,744	67,789,127
Germany	95,524,870	103,466,692	114,108,624
Great Britain	558,269,108	515,222,235	595,584,160
Italy	25,646,333		42,003,541
Netherlands	16,116,466	26,369,009	
Russia	10,689,328	13,155,995	
Switzerland	52,967,250		52,206,307
United States	31,878,566	33,398,672	40,851,918
British India	37,428,252	40,216,450	48,478,362
Japan	29,260,177	38,446,485	34,049,000

and the amount produced and consumed at home, are also important factors.

Table II gives the value of the world's export trade in cotton, by countries, for 1909, 1910, and 1911. The table is compiled from *Bureau of Census Bulletins*. Of more value, however, as showing the actual extent of the cotton

It is interesting to note that this enormous industry is concentrated about Lancashire, in a district whose area is about 50 per cent greater than that of the State of Rhode Island. In the United States the most marked development is the relative importance of Southern factories, situated in the very locality where cotton is produced. Since 1890 the number of spindles has greatly increased and now more than one-third of the whole number in the country are in the cotton-producing States. The number in the Southern States grew from 4,368,000 in 1900 to 11,583,000 in 1912, while those in the Northern States only increased from 15,104,000 to 18,996,000 in 1912. Other industrial conditions besides the nearness to the cotton crop produced this growth, chief of which has been the general industrial awakening experienced by the South. Capital, however, in this section, has shown greater progress than labor, so that the latter is still cheap; a working day is long, and there are comparatively few labor laws restricting the age, sex, and other conditions of labor.

In 1909, according to the census report, there were in the United States 1324 establishments engaged in the manufacture of cotton goods. The materials used cost \$371,009,000 and the manufactured products were valued at \$628,392,000. There were 387,771 persons engaged in these industries and the wages paid in 1909 were \$132,859,000 against \$66,025,000 in 1889, having thus doubled in 20 years.

During the closing years of the nineteenth

TABLE III
NUMBER OF SPINDLES IN COTTON MILLS

SEASON OF	Great Britain	Continental Europe	Northern United States	Southern United States	Total United States	India
1889-90	43,750,000	25,460,000	12,800,000	1,605,000	14,405,000	3,274,000
1899-1900	45,500,000	33,000,000	14,400,000	4,700,000	19,100,000	4,945,000
1909-10	53,729,000	40,190,000	17,770,000	10,490,000	28,226,000	6,053,000
1912-13	55,576,000	43,400,000	18,700,000	11,700,000	30,500,000	6,400,000

industry, including both home and foreign consumption, and its geographical tendencies as well, are the Tables III and IV, showing the number of cotton mills and spindles, the amount consumed, and the value of the output. By studying these tables certain facts and tendencies in the cotton trade are apparent. Great Britain is and for many years has been at the head of the cotton-goods trade, both in the amount exported and in the actual amount produced.

century the manufacture of cotton was much advanced in China and Japan. In China cotton has been made into cloth since 1260, and for four centuries it usurped the place of silk. Steam power was introduced into Chinese cotton factories in 1865-67 and into Japan in 1889. Great difficulty has been experienced in both China and Japan in getting laborers. There is no factory legislation in either country limiting the hours of labor, and in China children

TABLE IV
COTTON CONSUMPTION OF THE WORLD, IN 500-POUND BALES

YEAR	Great Britain	Continent of Europe	United States	India	All Others	Total World
1889-90	3,227,000	3,432,000	2,185,000	791,000		9,635,000
1899-1900	3,334,000	4,576,000	3,856,000	980,000	789,000	13,535,000
1900-1	3,269,000	4,576,000	3,727,000	1,060,000	784,000	13,416,000
1901-2	3,253,000	4,536,000	4,037,000	1,384,000	905,000	14,415,000
1902-3	3,185,000	5,143,000	4,015,000	1,364,000	766,000	14,478,000
1903-4	3,017,000	5,148,000	3,908,000	1,368,000	869,000	14,310,000
1904-5	3,620,000	5,148,000	4,310,000	1,474,000	1,060,000	15,612,000
1905-6	3,774,000	5,252,000	4,728,000	1,586,000	1,097,000	16,435,000
1906-7	3,892,000	5,460,000	4,950,000	1,552,000	1,145,000	16,999,000
1907-8	3,690,000	5,720,000	4,227,000	1,581,000	1,083,000	16,281,000
1908-9	3,720,000	5,720,000	4,912,000	1,653,000	1,159,000	17,164,000
1909-10	3,175,000	5,460,000	4,533,000	1,517,000	1,304,000	15,989,000
1910-11	3,776,000	5,460,000	4,485,000	1,494,000	1,400,000	16,615,000
1911-12	4,160,000	5,720,000	5,211,000	1,600,000	1,788,000	18,479,000

begin to work at a very early age. The working day is 11 or more hours long, and the factories run seven days in the week. Labor is also very cheap, as estimated by the amount of money paid for a day's work, which averages from 10 to 15 cents, but the standard of intelligence and faithfulness among operatives is so low that, measured by the amount and quality of the product, the real cost of labor is high. In Japan it is particularly hard to keep steady employees. The girls are used to the freedom and out-of-door life of the country and will not stay long at their situations, so that mill operators are constantly hampered with green hands. In Japan the weaving of cotton and other fabrics is still largely a household industry. In 1896, according to the French Consul at Yokohama, 660,408 dwellings or establishments contained 949,123 looms, at which 1,043,866 persons were engaged in weaving. The yarn used in this household art is largely factory spun, thus increasing rather than diminishing the demand for cotton factories.

The preceding Table IV, compiled from various sources, shows the cotton consumption of the world for a number of years. In China most of the cotton cloth made is produced by hand labor, in part from yarns made by the Chinese mills, and in part from yarns imported from India and Japan. The cotton mills of China up to 1905 produced only yarn, but since that time have begun the manufacture of cloth.

Japan had 200,000 spindles in operation in 1889; 1,358,125 spindles in 1899, and 2,192,000 in 1912. Japan consumed 99,375 bales of cotton in 1890; 644,818 bales in 1898; and 1,190,000 bales in 1912. China had 570,000 spindles in operation in 1899 and 831,000 in 1912. It is estimated that on July 1, 1900, the world's working spindles numbered 105,000,000, and 140,996,000 in 1912.

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COTTON, ARTIFICIAL. Artificial cotton is the term sometimes applied to the products obtained by treating wood pulp or other forms of cellulose in various ways in order to make filaments capable of being woven into textile material. These filaments are also called artificial silk, or, from their source, wood-pulp yarns. See WOOD-PULP YARNS.

COTTON, MERCERIZED. See MERCERIZED COTTON.

COTTON, CHARLES (1630-87). An English translator and poet. He was a friend of Izaak Walton, to whom he addressed several poems, and to the fifth edition (1676) of whose *Compleat Angler* he contributed as the "second part" an essay on fly fishing. His works, nearly all in verse, include a translation of Corneille's *Horace* (1671); the *Life of the Duke d'Espernon* (1670); *The Fair One of Tums*, published anonymously (1674); *The Scarronides, or Virgil Travestie* (1664), a coarse burlesque of the *Æneid* that ran through 15 editions; *The Voyage to Ireland in Burlesque* (1670); *The Wonders of the Peak* (1681). Cotton was a famous angler and was horticulturalist enough to write an excellent *Planters' Manual* (1675). Some of his poems have been much admired for their sweetness and directness of style, and a volume of his *Lyrical Poems* was edited by J. R. Tutin in 1903. Wordsworth and Lamb particularly praised his "Ode to Winter." His best work, the English version of Montaigne's *Essays* (1655 and frequently since), places him among the greatest of translators.

COTTON, CHARLES STANHOPE (1843-1909). An American naval officer, born in Milwaukee, Wis., and educated at the Naval Academy. In 1861 he entered active service and participated in several of the principal naval engagements of the Civil War. He was on the frigate *St. Lawrence* when that vessel captured the *Petrel* (July 28, 1861) and took part in the fight between the *Merrimac* and the *Monitor* (March, 1862). Soon after the close of the war he was appointed lieutenant commander. During the Spanish-American War he was in command of the auxiliary cruiser *Harvard*, and after the war he became commandant of the navy yard at Norfolk, Va. He was made a rear admiral in 1900 and was placed in command of the European squadron in 1903.

COTTON, GEORGE EDWARD LYNCH (1813-66). An English divine and educator. He was born

at Chester and was educated at Trinity College, Cambridge. From 1837 to 1852 he taught at Rugby, being the "young master" mentioned in *Tom Brown's School Days*. He was for six years principal of Marlborough College and in 1858 was made Bishop of Calcutta. He founded many schools and effected great improvement in the education of the poorer classes of the Anglo-Indian population. He was drowned in the Ganges. Consult the *Memoir* (London, 1871) by his wife.

COTTON, JOHN (1585-1652). An eminent Puritan divine, known as "The Patriarch of New England." He was born in Derby, England, and was educated at Trinity College and Emmanuel College, Cambridge, at the latter of which he was successively a fellow, head lecturer, dean, and catechist. Inclining towards Puritanism, he left Cambridge about 1612, and for the next 21 years, with one short intermission, he had charge of the church of St. Botolph's, at Boston, in Lincolnshire, where he had an extraordinary influence over his congregation, gained a wide reputation for learning and godliness, and trained many young men for the ministry. When Archbishop Laud became Primate of England (in 1633), Cotton was summoned to appear before the Court of High Commission, but escaped the pursuivants sent to apprehend him and, after lying in concealment for some time in London, embarked for Boston, New England (which had been named in compliment to him), where he landed in September, 1633. Almost immediately thereafter he was chosen as teacher of the First Church in Boston, of which the Rev. John Wilson was then pastor, and he continued to act in this capacity until his death. Here, as in England, he had a wide reputation for learning and piety and soon came to wield a powerful influence over affairs both ecclesiastical and secular in New England and especially in Massachusetts. According to William Hubbard (q.v.), a contemporary historian, whatever he "delivered in the pulpit was soon put into an order of court . . . or set up as a practice in the Church," and the enthusiastic Cotton Mather, speaking of his learning, says that he was "a most universal scholar, and a living system of the liberal arts, and a walking library." "He was," says Tyler, "the unmitigated pope of a pope-hating commonwealth." He took an active part in the Antinomian controversy, first supporting and afterward opposing Anne Hutchinson (q.v.), and conducted an extended controversy with Roger Williams, whose expulsion from Massachusetts he approved. He was a voluminous writer and published as many as 50 volumes, the most important of which are: *Set Forms of Prayer* (1642); *The Keys to the Kingdom of Heaven and the Power Thereof* (1664); *The Bloody Tenent Washed and Made White in the Blood of the Lamb* (1647), written in answer to a letter from Roger Williams; *A Brief Exposition upon Ecclesiastes*; *A Brief Exposition upon Canticles*; *A Treatise of the Covenant of Grace as It Is Dispensed to the Elect Seed*; *A Treatise Concerning Predestination*; and the famous catechism, entitled *Spiritual Milk for Babies, Drawn Out of the Breasts of Both Testaments, Chiefly for the Spiritual Nourishment of Boston Babies in Either England* (1646). A part of the controversy between him and Roger Williams may be found in the *Publications of Narragansett Club*, vols. i and

ii (Providence, 1866-67). Consult: McClure, *The Life of John Cotton* (Boston, 1846); Norton, *Abel Being Dead, Yet Speareth: or, the Life and Death of That Derservedly Famous Man of God, Mr. John Cotton* (London, 1658; republished, Boston, 1834); an interesting sketch in Mather, *Magnalia* (London, 1702); *John Cotton: Memorial Exercises, Boston First Church* (Boston, 1908); and a critique of Cotton's writings in Tyler, *A History of American Literature* (New York, 1878).

COTTON, NATHANIEL (1705-88). An English physician and poet, the friend of Young, author of *Night Thoughts*, and of the poet Cowper, whom he cared for in 1763-65 in his sanitarium, or, as he rather grandiloquently styled it, "Collegium Insanorum," at St. Albans, Hertfordshire, where he treated mental diseases with success. His *Visions in Verse* (1751) is his best-known volume, and among his shorter poems, "The Fireside" and "To a Child Five Years Old" are still found in anthologies. Consult *Select Poems of Dr. Cotton: with a Life of the Author*, in the series "The Works of the British Poets" (Philadelphia, 1819-23).

COTTON, SIR ROBERT BRUCE (1571-1631). A distinguished English antiquarian, founder of the Cottonian Library, now in the British Museum. After his education at Westminster School under the famous Camden, and at Cambridge, where he took a B.A. degree in his sixteenth year, he began those archaeological pursuits which made his name famous, and which proved of immense value to historians. As the dissolution of the monasteries, about half a century before, had dispersed many valuable collections of manuscripts among private persons, Cotton sought out and purchased these documents wherever practicable. On account of his ability and knowledge he was frequently consulted by ministers of state on difficult constitutional points and international questions. In 1600, at the request of Queen Elizabeth, who desired antiquarian authority on the matter, he wrote *A Brief Abstract of the Question of Precedency Between England and Spain*. King James, who knighted him in 1603 and gave him a baronetcy in 1611, employed him to vindicate the conduct of his mother, Mary, Queen of Scots, and also to examine whether the Roman Catholics, on account of whom some alarm was then felt, should be imprisoned or put to death. Cotton advocated tolerance. His intimacy with the Earl of Somerset led him to be suspected of complicity in the death of Sir Thomas Overbury, and in consequence he was imprisoned for about eight months. In 1629 a tract entitled *A Project How a Prince May Make Himself an Absolute Tyrant* was obtained from his library, the tendency of which Charles I and the Star Chamber considered dangerous to the liberty of the state. His library was accordingly declared unfit for public inspection, and he himself was denied all use of it. Depression at this edict caused his death, less than two years afterward. His son, Sir Thomas (1594-1662), regained possession of the library, and his grandson, Sir John (1621-1701), and great-grandson, Sir John (1679-1731), added to it considerably. The latter bequeathed it in public trust to the nation in 1700. In 1730 the library was lodged with the royal collection in Ashburnham House, Westminster. The following year a fire occurred in which 114 out of 958 manuscript volumes were reported as "lost, burned, or entirely destroyed;

and 98 damaged so as to be defective." Fortunately a great number of these injured volumes were skillfully restored, so that the library now consists of nearly 900 volumes, of which, says Mr. Edwards in his *Memoirs of Libraries*, "nearly 200 are state papers of the highest value. They include a vast series relating to the diplomatic intercourse between England and almost every state of Europe, extending from the reign of Edward III to that of James I. A large proportion of these documents consist of the original letters of sovereigns and of statesmen. Even those papers which are not original have a high degree of authority as coeval transcripts." The Cottonian Library was transferred to the British Museum (q.v.) in 1757. In addition to the manuscripts, the collection includes many valuable coins and antiquities. Among Cotton's works may be mentioned, in addition to those referred to above: *Povver of the Peeres and Commons of Parliament in point of Judicature* (1640); *Cottoni Postuma—Choice Proees of that Renowned Antiquary* (1672); *Divers Short Pieces Exposed to Publiok Light by J. Howell* (1679); "Speech before the Privy Council touching the Alteration of Coyn," in Shaw, *Select Tracts and Documents* (1896). Consult also: *Calendars of State Papers* (London, 1591-1631); *Parliamentary Journals* (ib.); *Planta, Catalogue of the Manuscripts in the Cottonian Library* (ib., 1802); Smith, *Catalogue* (Oxford, 1896), containing a memoir; Kippis, "Robert Bruce Cotton," in *Biog. Brit.* (London, 1797); D'Ewes, *Autobiography* (2 vols., ib., 1845); Nichols, *Progresses of James I* (4 vols., ib., 1828); id., *Leicestershire* (ib., 1795-1811); Gardiner, *History of England* (ib., 1883-84).

COTTON BIRD. A small South African titmouse (*Agithalus capensis*), called *kapok vogel* (i.e., 'cotton bird') by the Cape Colony Dutch on account of its wonderful nest, made of cottony materials, which closely resemble the nest of its congener, the penduline titmouse of Europe, illustrated on the Plate of PENSILE NESTS OF BIRDS with the article NIDIFICATION. (See also TITMOUSE.) This nest, first figured by Le Vaillant (*Oiseaux d'Afrique*, Paris, 1806), whose picture has been widely copied, is usually wrongly assigned to an entirely different bird. Consult Shelley, *Birds of Africa* (London, 1900).

COTTON FAMINE. The name given to an industrial crisis in the manufacturing towns of northern England, occasioned by the almost complete disappearance of cotton imports from the United States during the last three years of the Civil War. As a result of the blockade of the Southern ports by the Federal government, the importation of cotton from the United States into Great Britain sank from more than 1,000,000,000 pounds in 1860 to 816,000,000 pounds in 1861, 13,000,000 pounds in 1862, and 6,000,000 pounds in 1863, and as the imports from the United States constituted more than three-fourths of the total supply, the blow to the cotton industry in Lancashire was a stunning one. The suffering fell most heavily on the mill operatives, who, as a body, were brought to the verge of starvation by the partial or complete suspension of production. In November, 1862, it was estimated that more than 350,000 persons in Lancashire were subsisting on parochial relief or private charity. It is a notable fact that, in spite of their great privations, the factory population of Lancashire was in thorough sympathy with the Northern cause,

which they regarded as a crusade against slavery. Consult Arnold, *History of the Cotton Famine* (London, 1865).

COTTON GIN. A machine for separating the cotton fibre from the seed, invented by Eli Whitney of Massachusetts and patented March 14, 1794. Previously the work had been done by hand, a slow and tedious process. Two types of gin are now in use—the saw gin of the Whitney type, which does very rapid work, and is generally used, and the roller gin, which is much slower, but is less likely to injure the fibre and is therefore preferred for the long staple Sea Island and Egyptian cottons. See COTTON, *Manufacture*.

COTTON GRASS (from its cottony spike), *Eriophorum*. A genus of plants of the family Cyperaceæ, having the fruit accompanied with long, silky hairs which spring from the base of the ovary. The species, which are about a dozen, are natives chiefly of the colder regions of the Northern Hemisphere. Several are found in America, and their white, cottony fruit-bearing spikes are well known in our swamps and bogs. The cottony substance is used for stuffing pillows, etc., and it is claimed that cloth may be made from it. The fibre lacks the twist of the cotton fibre and cannot be spun as readily. The stems of a Himalayan species, *Eriophorum cannabinum*, called *bhabhur*, yield a very strong fibre and are much employed for making cordage, being simply twisted into cables, of which rope bridges are usually made; but they are not durable and require much repairing every year. Cotton grass is said to be valuable for sheep pasture.

COTTON INSECTS. One of the most important insects injurious to the American cotton culture is the cotton worm, the larva of a noctuid moth (*Alabama*), which sometimes defoliates whole districts. It is believed to be South American, and first became strikingly harmful in the Southern States in 1804. It is now known all over the Union, but its Northern food plant is unknown. A government commission reported in 1879 that the average loss to the cotton-growing States due to its ravages was then from \$15,000,000 to \$20,000,000 annually. The moth is 1½ inches in spread of wings, the fore wings and body reddish brown, with delicate zigzag markings, and the hinder wings pale gray-brown. It flies at night and deposits eggs singly or sparsely on the underside of the leaves of the cotton plant, where they hatch in midsummer in about 50 to 60 hours. The caterpillars begin at once to devour the leaves, and so many are they, sometimes, that whole fields have been defoliated in three days, when the caterpillars swarm elsewhere in search of more food. In midsummer the caterpillars remain about 13 days, then fold a leaf about themselves and spin a cocoon in which they pupate. In two to four days after issuing from the chrysalis the female moth begins to lay—her average product being 400 eggs in the season. The natural food is the juice exuding from the glands on the leaf's midrib and at the base of blooms and bolls; but it will feed on any kind of fruit as it ripens. Until the worms are numerous enough to riddle the leaves badly, the moths continue to lay near their birthplace; then they migrate to considerable distances—seldom, however, until after the third generation of worms, say July 1, in southern Texas. Migrations are most common in the fall months, the moths flying at night and on

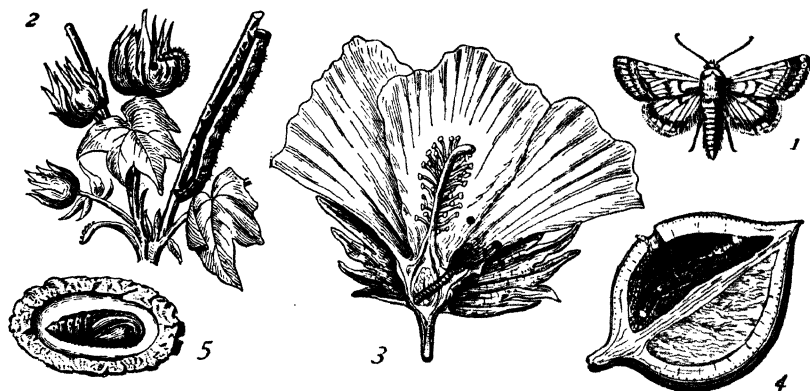
cloudy days. In the Southern States only the moths hibernate (the worms never, nor anywhere), hibernation being more frequent in the Southwestern than in the Atlantic States. The moths hibernate under bark, in logs and timbers, etc., and mild winters are more severe on them than cold ones, which keep them torpid.

In some districts there are as many as seven generations in a season. The average time from the egg of one generation to that of the next is a month.

The caterpillars visit earliest low alluvial lands where the plants are luxurious and thrifty. Moisture is favorable to their development; hot, dry weather unfavorable. The damages to the crop may reach 25 per cent in the Southern districts; but in the Northern the worms may do

similar insects, viz., *Prodenia littoralis* and *Earias insulana*.

The cotton stainer, or red bug (*Dysdercus suturalis*), is a small suctorial bug, "which drains the sap from the bolls by its puncture, causing them to become diminutive or abortive; but the principal injury it does is by voiding an excrementitious liquid which stains the cotton fibre yellow or reddish and very much depreciates its value in the market, the stains being indelible." It is also troublesome to orange growers in cotton-growing districts. See *Insect Life*, vol. i (Washington, 1888), illustrated. Several plant bugs, such as the capsid (*Psallus delicatus*), known in Texas as the cotton flea, and certain small beetles, are also injurious to cotton. For a description of the weevil, see WEEVIL.



THE COTTON BOLLWORM.

1. Adult moth (*Heliothis armigera*). 2. Destructive larva (the "bollworm" or "bud worm"), with a small boll pierced by a young caterpillar. 3. Vertical section of a newly expanded cotton flower, showing a young bollworm at work. 4. Section of a large green boll, which contains a caterpillar that has devoured the contents of the cell. 5. A pupa within its earthen case.

more good than harm, by removing superabundant leaves, thus facilitating the ripening of the bolls.

For further and extensive information and preventive measures, consult: Comstock, "Report on Cotton Insects," in *United States Department of Agriculture* (Washington, 1879), illustrated; Riley, *United States Entomological Commission, 4th Report* (ib., 1885); *Bulletin No. 18, n.s.* (ib., 1898).

The bud worm is scarcely second in its evil effects. (See BOLLWORM.) It is hatched from eggs deposited singly on all parts of the plant, taking only three to five days to hatch in summer. The worm is much like the cotton caterpillar, but larger. Its principal food is the flowers and bolls. The chrysalis is found a few inches underground. The chrysalis state lasts 7 to 10 days in midsummer, double that in cooler weather. The moth is in appearance and habits much like the *Aletia*, but seldom appears before July or August. Hibernation is in the chrysalis state only and underground. Breeding continues until cold weather; but the first three generations of each year generally feed in the cornfields, the first lot seen on cotton being the fourth brood.

Other injurious moths infesting cotton and eating the foliage include the yellow bear (*Spilosoma virginica*), the io (*Saturnia io*), the basket worm, or bagworm (q.v.), and several others. Cotton culture in Egypt is afflicted by two very

The natural enemies of the cotton worm and of the bollworm are domestic fowls, birds, spiders, beetles, wasps, ants, parasites, etc. As preventive measures, the free use of poisons is good for both, and fall plowing, which upturns the chrysalids of the bollworm, exposes these to the attacks of fowls and the fatal influences of cold.

Consult: "Mexican Cotton Boll Weevil," *Senate Document No. 395* (Washington, 1912); "Control of the Boll Weevil," *Farmers Bulletin No. 500* (ib., 1912); "The Boll Weevil Problem," *Farmers Bulletin No. 512* (ib., 1912); "The Cotton Boll," *United States Department of Agriculture, Bureau Entomology, Bulletin No. 50* (ib., 1905).

COTTON MOUSE. A field mouse (*Peromyscus gossypinus*), dark brown, with grayish feet, prevalent in the southern United States and injurious to cotton plants. Its habits are similar to those of the common white-footed mouse of the North. See MOUSE.

COTTONMOUTH (so named from the white, cotton-like streak about its mouth). Properly, the moccasin snake (q.v.), but also a name in the southern United States of the copperhead.

COTTONSEED AND ITS PRODUCTS.
Cottonseed Oil.—Cotton, which is described in the article bearing that title, when it is picked consists of the seeds and the lint or fibre adhering to and covering the seeds. The seeds constitute about two-thirds of this product. The

census of 1910 estimated the production of seed at 5,324,634 tons, valued at \$121,076,984. It constitutes a very valuable part of the product and is used for manufacturing cottonseed oil, for feeding animals, and for fertilizer. The cottonseed, after the removal of the fibre "linters" and hulls, yields, upon pressure, a large amount of yellow oil, with a bland, nut-like taste. Even before the invention of the cotton gin in 1794, the utilization of cottonseed was attempted, and in 1770 samples of the oil were exhibited by the Moravians in Bethlehem, Pa. Previous to that time the seed had been allowed to rot on the ground by many of the planters, while others more intelligent had utilized it as food for cattle, sheep, and horses. Others dug furrow trenches and buried it in the rows on which the next crop of cotton would be planted. Some fed it raw to their stock, while others boiled or roasted it to make it possibly more palatable. In 1820 a patent was granted for a process for extracting the oil, but the construction of the mills was so slow that at the end of 50 years only 26 cotton-oil mills had been erected. Towards the close of the nineteenth century the value of the cottonseed began to be more generally appreciated. In 1909 there were in the United States 817 cotton-oil mills, which crushed a total of 3,798,549 tons of cottonseed, yielding 157,145,689 gallons of crude oil, 1,661,734 tons of cottonseed meal, and 1,258,612 tons of hulls. The product of these mills had a combined value of \$147,867,894 against total of \$58,727,000 in 1899.

In addition to the oil extracted from the cottonseed, it yields the following by-products: *Linters*, or short bits of lint that adhere to the seed in the ordinary process of ginning, and are stripped by a specially constructed gin. These short fibres are used for the manufacture of batting and wadding. *Hulls*, the outer casings of the seed, used extensively for cattle food, whose properties are discussed below. *Cottonseed meal*, the residue left after the oil is expressed from the meats. This is extensively used as a cattle food and as a fertilizer. *Sludge*, which settles at the bottom of the oil tanks and is used in the making of soap, stearin, etc.

The process of manufacture is briefly as follows: The seed is shoveled from the cars into conveyors, which are spiral screens revolving in troughs with perforated bottoms through which any loose soil, sand, and stones are shaken. This process of cleaning is continued in a separator, where by means of different-sized screens all dirt and impurities are removed. A strong magnet is also used to draw out bits of nails and other iron. The seed being sifted and cleansed, it is now passed through the linter, a specially constructed gin for removing these short fibres. The lint is ginned twice, the second process removing the shorter fibres, so that two brands or qualities are thus obtained. The next process is to crack the hulls in a machine between revolving blades and bars, and then the meats and hulls are separated, the latter being sold either loose or in 100-pound bales. The meats are now ready to be passed through heavy calender rolls to crush the oil cells. There are two processes of making cottonseed oil. It may be expressed directly from the cold meats, this process making a high-grade oil; or the meats may first be heated in cookers. These cookers are steam-heated metal pans, covered with nonheat-conducting material and holding 700 pounds. The

seeds are cooked from one-quarter to three-quarters of an hour, according to their condition as determined by the judgment of the operator, too little or too much cooking giving a smaller yield of oil. The cooked meats are dropped into a camel's-hair sheet, spread out on a steel plate. Wrapped in this sheet the meats are subjected to pressure, which is gradually increased till it reaches 3500 pounds per square inch. Under this pressure a dark, murky oil flows out in streams and is received in reservoirs beneath the presses, whence it is pumped into settling tanks. The cakes are now taken from their wrappings of camel's-hair, cooled, and dried. They are then cracked and ground into meal, which is shipped directly in sacks or pressed again into cakes. After the crude oil has settled, it is drawn off and refined by treating it to a 10 or 15 per cent solution of caustic soda and then allowed again to settle. As it settles, the mucilaginous, albuminous coloring matters and other impurities sink to the bottom, leaving a clear yellow oil, which may be still further filtered and purified if desired. The white oil of commerce is produced by shaking up the oil with a 2 or 3 per cent mixture of fuller's earth and then allowing it to settle.

The commercial cottonseed oils are classified as crude, summer yellow, summer white, winter yellow, and winter white. The winter oils are made by cooling the summer oils to the freezing point, when the palmitin crystallizes and the oil is pressed out of the remaining solidified material. Cottonseed oil consists chiefly of palmitin and olein, the winter oils being almost entirely olein. It stands midway between the drying and nondrying oils, its drying properties being inferior to those of linseed oil. (See OILS.) It solidifies at from 32° to 38° F., is almost odorless, and has a slight nutty taste. Its uses are constantly increasing. It is employed extensively in cooking and, prior to the passage of pure-food laws, was also used as an adulterant of lard, olive oil, and other staples. Large quantities are used in making oleomargarine (q.v.). It is used in pharmacy, in making soap and paint, as a lubricator and an illuminant. Consult Brooks, *Cotton and its Uses* (New York, 1898).

Feeding and Fertilizing Value.—Brief mention has already been made of the use of cottonseed products for feeding cattle and for fertilizer. Whole cottonseed has been shown by a large number of analyses to range in composition as follows:

PERCENTAGE COMPOSITION OF WHOLE COTTONSEED

	Water	Ash	Protein	Fibre	Nitrogen-free extract	Fat
Maximum	17.51	8.00	29.70	32.40	36.70	29.34
Minimum	8.00	2.89	13.62	17.60	7.58	10.40
Average	9.92	4.74	19.38	22.57	23.94	19.45

This material was used in the past to considerable extent as a feeding stuff for cattle, hogs, and sheep, and was fed either raw, cooked, or roasted, but, with the advent of oil mills, its use for this purpose is much less in the vicinity of these, because the seed is disposed of to better advantage to the millers or can be exchanged for cottonseed meal. There are also the further reasons that the lint on the seed and the dust it collects are likely to be injurious, while at the

same time it is not easy to mix the seed itself thoroughly with other coarse feeds. It is a very rich feeding stuff, and animals must be accustomed to it gradually. The whole seed is sometimes used for fertilizer, and then it is partially rolled.

Cottonseed meal is the ground residue left in the manufacture of oil from the seed. It is sometimes called cottonseed cake and belongs to the class of feeding stuffs known as oil cakes. Cottonseed cake is of two kinds—undecorticated, or that from the whole seed, and decorticated, or made from the kernels after the hulls have been removed. Undecorticated cake was formerly largely used, but most of the mills now remove the hulls before expressing the oil. Cottonseed meal is bright yellow in color, with a sweet, nutty flavor. It deteriorates and becomes discolored with age. The following summary of over 400 analyses shows its range in composition, which is due to differences in the composition of the seed and the completeness with which the hulls are separated and the oil expressed.

PERCENTAGE COMPOSITION OF COTTONSEED MEAL (DECORTICATED)

	Water	Ash	Protein	Fibre	Nitrogen-free extract	Fat
Maximum	18 52	10 60	52 88	15 15	38 68	20 66
Minimum	5 29	1 72	23 27	1 88	9 13	2 18
Average	8 52	7 02	43 26	5 44	22 31	13 45

This material is one of the richest feeding stuffs in use, considerably exceeding in protein and fat such materials as linseed meal, but, in spite of this, it is quite well digested when fed in moderation. On an average, 88.8 per cent of the protein, 57 per cent of the fibre, 77.6 per cent of the nitrogen-free extract, and 88.6 per cent of the fat has been found to be digested by ruminants. It is fed extensively in the United States to cows, cattle, sheep, and nearly all kinds of farm stock. Pigs do not seem, for some reason, to be able to eat the meal for any considerable length of time without danger of injurious effects. An apparent antidote for cottonseed-meal poisoning has been found by Withers in iron salts. Young animals, like calves, have also often been injured by cottonseed meal, and its use with them is attended with danger. All experience goes to show that the fresh meal can be fed to other kinds of animals without danger and in large quantities after they become accustomed to it. Six, 8, and even 10 pounds of cottonseed meal per head is often fed to steers for short periods with good results, using no other kind of grain except the hulls. It is undoubtedly best to mix some material like corn meal with it. For cows about two pounds a day seem to be a safe limit for continued feeding, although three and often four pounds are often fed. It tends to give a firmer, harder butter, which will stand shipment better, but large rations injure the quality. Larger quantities can be fed with safety in winter than in summer. The meal was formerly adulterated with finely ground hulls, but the foodstuff laws now require the composition to be stated.

Cottonseed meal is rich in fertilizing materials, as shown by the following average of over 200 analyses: water, 7.8; ash, 7; nitrogen, 6.8; phosphoric acid, 2.9; and potash, 1.8 per cent.

It is chiefly used as a source of nitrogen, and finds quite extensive use for that purpose through the southern portion of the United States. It has given excellent results with sugar cane, cotton, and corn, and has been successfully substituted for barnyard manure in the culture of tobacco. But its use as a fertilizer is of course wasteful, as the food constituents are not utilized in that case. A more rational practice in many cases is to feed the meal and apply the resulting manure to the soil, since from 80 to 90 per cent of the fertilizing materials would be recovered in the manure, and additional benefit would be secured in the production of meat, milk, etc.

Cottonseed hulls, which are removed at the mills by means of crushers, screens, and shakers, also possess some feeding value and are much used with the meal. They constitute nearly one-half of the weight of the ginned seed. They contain about 11 per cent of water, 4 of protein, 46 of fibre, 33 of nitrogen-free extract, and 2 per cent of fat. Their digestibility is low, less than 40 per cent of the total dry matter being assimilated. They are hard and dry, usually covered with a fuzzy lint, and very bulky. They are used principally as a cheap substitute for hay and for the purpose of giving bulk to the ration. Large numbers of cattle are fattened in the Southern States of the United States on cottonseed meal and hulls exclusively, in proportions varying from two to six pounds of hulls to one pound of meal. The practice is claimed to be economical and profitable. Cottonseed hulls were formerly burned at the oil mills as fuel, the resulting cotton-hull ashes being rich in potash and much used as a fertilizer. (See ASHES.) Consult Roper, "Cottonseed Products," in *Twelfth United States Census*, vol. ix, part iii (Washington, 1902); *Thirteenth Census*, vol. viii (Washington, 1913). Tompkins, *Cotton and Cotton Oil* (Charlotte, N. C., 1901). Tamborn, *Cottonseed Products* (New York, 1905).

COTTON STATE. Alabama. See STATES, POPULAR NAMES OF.

COT'TONTAIL'. Any of the smaller American hares, especially the common wood hare, or gray rabbit. The name refers to the fluffy white scent and is often personified as "Molly Cotton-tail." See HARE, and Plate of HARES AND PIKA.

COTTON WEIGHS. See CONSCIENCE WEIGHS.

COT'TONWOOD'. A name applied to a number of species of *Populus* on account of the abundant white cottony hairs surrounding the seed. The trees are widely distributed. Some attain large size and are valuable for many purposes. See *POPULAR*.

COTTRELL, FREDERICK GARDNER (1877-). An American chemist, born at Oakland, Cal. He was educated at the universities of California, Berlin, and Leipzig, from 1897 to 1900 taught chemistry at the Oakland High School, and between 1902 and 1911 was instructor and assistant professor in the department of physical chemistry at the University of California. In 1911 he became chief physical chemist of the United States Bureau of Mines. He is author of *Der Restrom bei galvanischer Polarisation betrachtet als Diffusionsproblem* (1903).

COT'YLEDON (Gk. κοτύληδών, *kotylēdōn*, cup-shaped hollow socket, from κοτύλη, *kotylē*, hollow cup). The first leaf or leaves of an embryo. In seed plants the cotyledons are usually formed within the seed, and in most cases they escape during germination, but are usually

very different in appearance from the later leaves. See SEED.

COTYLOSAURIA (Neo-Lat. nom. pl., from Gk. *κοτύλη*, *kotylē*, hollow cup + *σαῦρος*, *sauros*, lizard). The order which includes the most ancient reptiles, fossil in rocks of the Carboniferous and Permian ages. The Cotylosauria are generally agreed to be the ancestors of all later reptilian types and are most nearly allied to the turtles among living reptiles, though they are much more primitive and show no evidences of a carapace. The cotylosaurians are thus characterized by Cope: "Quadrato bone united with adjacent elements by suture; temporal regions with roof of a few symmetrical segments. No distinct postorbital bars; vertebrae amphicæulous; ilium narrow, vertical; feet ambulatory."—*Report United States National Museum, 1898* (Washington, 1900). Consult Case, "A Review of the Cotylosauria of North America," *Carnegie Institution Publication* (Washington, 1911).

COTYS, or **COTYTTO** (Lat., from Gk. *Κόρυς*, *Korys*, *Korvtrá*, *Kotyttō*). A Thracian goddess, whose festival, the Cotytia, was held at night and was notorious for its debaucheries. Her worship was adopted by some of the Greek states.

COTYTIA. See COTYS.

COUCAL, *kō'kal* (probably an African word, although according to Cuvier it was coined in 1796 by Le Vaillant in his *Oiseaux d'Afrique*, from Fr. *coucou*, cuckoo + *al-ouette*, sparrow). A kind of cuckoo, many species of which are widely distributed throughout Africa and south-eastern Asia to Australia, constituting the subfamily Centropodinae, especially characterized by having the hind toe terminated by a straight, spinelike claw, whence they have been called "lark-heeled." They are large, ground-keeping birds, generally red and black, more or less glossed, and sometimes banded with brown, and are known generally as "ground cuckoos." A species of the Philippines has a rounded crest and black, horny appendages to the feathers of the head and throat. Some other Asiatic species mimic pheasants in appearance and gait and are called "pheasant cuckoos." The best-known one, the very common Indian "crow pheasant" (*Centropus sinensis*), is nearly 2 feet long, black, with the mantle and wings chestnut, and utters a curious howling cry, followed by a series of rattling exclamations. All these birds make their own nests, sometimes elaborate roofed structures in thorny bushes, and lay white eggs incrustated like those of an. They are closely allied to the American road runner. See CUCKOO.

COUCE, DARIUS NASH (1822-97). An American soldier. He was born at South East, N. Y., graduated at West Point in 1846, served in the Mexican War (1846-47), and was brevetted first lieutenant in 1847 for services at Buena Vista. In 1849-50 he served against the Seminoles and in 1853 made an important exploring expedition into northern Mexico. In 1855 he resigned from the army to become a merchant in New York, but in June, 1861, reentered the service as a colonel of volunteers, and in August became brigadier general. He served in 1861-62 with the Army of the Potomac, rendering valuable services at Fair Oaks, Williamsburg, and Malvern Hill; was promoted to be major general in July, 1862; commanded the Second Army Corps at Fredericksburg and Chancellorsville; was in command of the Department of Susquehanna in 1863 and 1864; and was at the head of a division at the battle of Nashville. He resigned in

1865, and in the same year was an unsuccessful candidate on the Democratic ticket for the governorship of Massachusetts. He was subsequently collector of the port of Boston in 1866-67, was quartermaster-general of Connecticut in 1877-78, and was adjutant general of that State in 1883-84.

COUCHANT, *kou'chant* (Fr., pres. part. of *coucher*, to lie down). In heraldry, a beast lying down, with his head up, is couchant. If the head is down, he is dormant. See HERALDRY.

COUCH GRASS (corrupted from *quitch grass*, *quich grass*; so called from its rapid growth), *Agropyron repens*. Also called wheat grass, dog grass, quickens, and squich or quitch. A grass chiefly known as a troublesome weed. It is common in most parts of Europe and North America. See AGROPYRON.

COUCY, *kō'sé'*, **THE CHÂTELAIN DE**. A French troubadour, whose name was Guy—although he has sometimes been identified with Renaud, Guy's successor, as Châtelain of Coucy. Guy became Châtelain of Coucy in 1186, took part in the Third Crusade (1189-91), and was killed by the Saracens about 1203. His work consists of about 16 songs, in the troubadour style, but with more sincerity and originality than the usual *chansons courtoises* of the time. They were published by Fauth as *Die Lieder des Castellan von Coucy* (Heidelberg, 1883). The legend connected with his name is found in the literature of many countries, though it is most likely of Breton origin. About the end of the thirteenth century there appeared a story, or *roman*, in verse by Jakemon Sakesep, of whom nothing is known, and whose name is taken from an acrostic given in his work, *Roman d'aventure*. He tells of the loves of the Châtelain de Coucy and the Dame de Fayel. Falling ill on his way from the Holy Land, the Châtelain ordered that after his death his heart be taken to his lady. But her husband intercepted the messenger, took the sacred souvenir, and forced his wife to eat it. Thereupon the Dame starved herself to death. The story was published with a modern version by Crapelet (Paris, 1829), and an English romance on the same subject is printed in vol. iii of Ritson's *English Metrical Romances* (1885). See CABRETAING, GUILLAUME DE.

COUCY-LE-CHÂTEAU, *kō'sé'le-shá'tō'*. A small village and cantonal seat in the Department of Aisne, France, 10 miles north of Soissons (Map: France, N., J 3). It is celebrated for the remains of its medieval castle of the thirteenth century, standing on an acclivity, accessible on one side alone, and one of the most formidable fortresses of its period. The castle covers an area of 10,000 square yards and is surrounded by lofty walls and a moat. Four towers flank the donjon, which is 210 feet high, 100 feet in diameter, and has walls 34 feet thick. Pop., 1901, 683; 1911, 657. Built by Enguerrand III, a pretender to the throne of France, it was purchased in 1396 by Louis of Orléans and in 1498 became crown property. It was dismantled by Mazarin's order in 1652.

COUDER, *kō'dār'*, **LOUIS CHARLES AUGUSTE** (1790-1873). A French historical, religious, and decorative painter. He was born in Paris and studied at the Beaux-Arts under David and Regnault. He first attracted favorable attention in the Salon of 1817 with "The Levite of Ephraim" (Luxembourg), which was followed by several historical and religious pictures. His frescoes in the Rotunda of the Louvre (1820)

were severely criticized, but he was more successful with his decorations of several Parisian churches and with his series of large historical compositions in the gallery at Versailles, beginning with the "Battle of Lawfield" and including the "Siege of Yorktown." Couder was one of the most important representatives of the Classical school in France. He was a member of the *conseil supérieur* of the Ecole des Beaux-Arts and wrote some critical works on art. Consult, Jules Breton, *Nos peintres du siècle* (Paris, n. d.).

COUDERSPORT, kou'dérz-pört. A borough and the county seat of Potter Co., Pa., 110 miles (direct) east by south of Erie, on the Allegheny River, and on the Coudersport and Port Allegany Railroad (Map: Pennsylvania, F 2). It contains a public library and a hospital. The borough has flour mills, a foundry, a tannery, and manufactures of furniture, rubber goods, mangle rollers, condensed milk, barrel headings, etc. Pop., 1890, 1530. 1900, 3217; 1910, 3100.

COUDERT, koo-dér', FREDERIC RENE (1832-1903). An American lawyer, born of French parents in New York. He graduated at Columbia College in 1850 and was admitted to the New York bar three years later. In 1877 he was a delegate of the New York Chamber of Commerce to the Antwerp Congress, which was held for the purpose of establishing a universal system of general average. He was counsel for the United States before the International Bering Sea Commission (Paris, 1893-95), a member of President Cleveland's Venezuela Boundary Commission (1896-98). He received the Cross of the Legion of Honor and also decorations from Italy and Venezuela. His publications include *International Law, the Rights of Ships* (1895), and *Addresses, Historical-Political-Sociological* (1905).

COUDES, or **COUDIÈRES**. See ELBOV PIECES

COUDREAU, koo'drô', HENRI ANATOLE (1859-1899). A French explorer, born in the Department of Charente-Inférieure and educated at Cluny. In 1881 he explored French Guiana and the adjacent territory, and in 1895 he was commissioned by the government of Pará to explore the Tapajos, Xingu, and other branches of the Amazon. These explorations are described in several interesting volumes published in 1897. His other publications include: *Voyage au rio Branco et aux Montagnes de la Lune* (1886); *Etudes sur les Guyanes et l'Amazonie* (1887); *Chez nos Indiens* (1892); *Quatre années dans la Guyanne française* (1893); *L'Etat de Para* (1897); *Voyage au Tapajoz* (1897); *Voyage au Tocantins-Araguaya* (1897); *Voyage au Xingu* (1897); *Voyage à Itaboca et à l'Ilacayuna* (1898); *Voyage entre Tocantins et Xingu* (1899); *Voyage au Yumunda* (1899).

COUES, kouz, ELLIOTT (1842-99). An American naturalist, particularly known for his researches in ornithology. He was born at Portsmouth, N. H., graduated at Columbian (now George Washington) University in 1861, from the medical department of that institution in 1863, became an assistant surgeon in the United States army, and made extensive studies of the flora and fauna in the vicinity of the various posts at which he chanced to be stationed. In 1873-76 he was attached as surgeon and naturalist to the United States Northern Boundary Commission, and from 1876 to 1880 as secretary and naturalist to the United States Geological and Geographical Survey of the Territories, di-

rected by Dr. F. V. Hayden. He resigned his commission in 1881, and thenceforth was occupied wholly with scientific pursuits. From 1877 to 1887 he was professor of anatomy at the National Medical College at Washington, D. C. He was elected to the National Academy of Sciences in 1877, was a founder of the American Ornithologists' Union, and an editor of the *Auk*, the journal of that society. About 1880 he became interested in spiritualism, theosophy, and allied matters, and for a time was affiliated with the Theosophical Society. He was known as a student of comparative anatomy and general biology, and for seven years was connected with the *Century Dictionary* as editor and contributor in the departments of general zoology, biology, and comparative anatomy. But while his field of activity was wide, he was prominent chiefly as a writer on ornithology and in particular on that of North American birds. His *Key to North American Birds* (1872; rewritten 1884; again, 1901; 5th ed., 1903) has perhaps had a greater influence on American ornithology than any other work. With this should be named his *Field Ornithology* (1874); *Birds of the Northwest* (1874); *Fur-Bearing Animals* (1877); *Birds of the Colorado Valley* (1878); an incomplete *Bibliography of Ornithology* (1878-80); *New England Bird-Life* (1881; with W. A. Stearns); *Dictionary and Check-List of North American Birds* (1882); *Bogen* (1882; 4th ed., 1884); *The Demon of Darwin* (1884). He also made investigations regarding the early exploration of the trans-Mississippi region, and edited (1893) the *Journals* of Lewis and Clark. As a contributor to the technical advance of ornithology in America he ranked as not greatly inferior to Spencer Baird (q.v.), and as a popular expositor of the subject probably had no equal.

COUGAR, koo'gér (Fr. *couguar*, Sp. *cuguar*, from native South American *cuguacuarana*, *cuguacuarana*). One of the names of the American panther (*Felis concolor*), described in this work under PUMA (q.v.). Although widely in use, the name should be abandoned because it perpetuates an error of identification. Cuvier explained its origin in his *Règne animal* (Griffith's version, *The Animal Kingdom*, vol. ii, London, 1827) as follows, speaking of the puma: "It is called by the Mexicans *Mistli*; in Peru, *Puma*; in Brazil, *Cuguacuarana* (the word *Cougoua* is contracted by Buffon from this latter barbarous appellation); and in Paraguay *Gua-zuara*. . . . The name *Cougoua*, by which it is most commonly known in Europe, particularly in France, appears, probably, to have been borrowed from that proper to another animal; . . . but puma is its native name." Elsewhere it appears that the "other animal" was the *eyra* (q.v.). A drawing of this cat brought to Europe by John Maurice, Count of Nassau, when Governor of Dutch Guiana in the seventeenth century, was labeled "cuguacuarana" and "cuguacuarana." This was copied by Maregrave and Piso and applied by Buffon, in the contracted form above noted, probably under the belief that the *eyra* (which is concolorous) was the same animal as the puma.

COUGHING (AS, *cohhetan*, Dutch *kugchen*, to cough, MHG. *küchen*, *kichen*, Ger. *kuchen*, *kechen*, to gasp; imitative of the sound). Considered physiologically, coughing consists, first, in a long inspiration which fills the lungs to a greater extent than usual; second, in a closure of the glottis, or narrow opening in the organ of

voice (see LARYNX), at the commencement of the act of expiration, and third, in a sudden forcing open of the glottis by the violence of the expiratory movement. In this way a blast of air is driven upward from the lungs through the mouth, which carries with it anything that may be present and cause irritation in the air passages. Coughing may occur from irritation in the back of the throat, in the larynx, trachea, or bronchial tubes, and may be excited by irritant gases, or by articles of food or drink—such as even a drop of water or a crumb of bread—making their way into the air passages instead of into the esophagus, or by excessive or morbid secretion from the walls of the air tubes, or even by the entrance of cold air, when the lining membrane of the air passages is abnormally irritable, or by the tickling due to an elongated uvula. Reflex cough is often set up by irritation of the external ear canal, as by the presence of cerumen. Cough is reflex and involuntary generally, and is due to irritation of the terminal fibres of the pneumogastric nerves, which are distributed to the mucous membrane of the respiratory tract. The object of coughing in the animal organism is unquestionably to guard against the danger of the entrance of mechanical and chemical irritants into the air passages; and accordingly the mucous membrane, especially of their upper part, is endowed with a most exquisite sensibility, which, when aroused by mechanical irritation or by disease, provokes incessant coughing until the cause of the irritation is removed. Cough is a common symptom of all diseases of the organs of respiration, as well as of inflammatory affections of the throat, tonsils, and nose. The treatment of cough depends upon the cause. See PNEUMONIA; BRONCHITIS; PLEURISY; TUBERCULOSIS.

COUIY. A tree porcupine. See PORCUPINE.

COULANGES, kōō'lanzh', FUSTEL DE. See FUSTEL DE COULANGES.

COULANGES, PHILIPPE EMMANUEL, MARQUIS DE (1633–1716). A French courtier, famous for his correspondence with his cousin, Madame de Sévigné (q.v.). His writings include: *Recueil des chansons* (1698); *Lettres* (published with those of Madame de Sévigné); and *Mémoires*, edited by Monmerqué (Paris, 1820).

COULIN, kōō'lin. In Spenser's *Faerie Queene*, a British giant killed by falling into a chasm when pursued by Debon.

COULMIERS, kōō'myā'. A village in the Department of Loiret, France, 13 miles northwest of Orleans. Population, 1901, 368; 1911, 404. On Nov. 9, 1870, the German and French forces, under Von der Tann and Aurelle de Paladines respectively, met here in a seven hours' battle, the former suffering a loss of 1166 and being compelled to retreat to Artenay, the French losing 1500 and taking prisoners 1000 sick and wounded Germans. Consult Lehautour. *Coulmiers et Orleans* (Paris, 1893).

COULOMB, kōō'lōn' (named after the physicist Coulomb). The practical unit of quantity of electricity. In the United States the legal unit is the international coulomb, "which is the quantity of electricity transferred by a current of one international ampere in one second." Therefore, if in the ordinary form of silver voltameter, m grams of silver are deposited, $m \div 0.001118$ is the number of coulombs which have passed, assuming that an ampere deposits 0.001118 gram of silver per second. See AMPERE; ELECTRICAL UNITS.

COULOMB, CHARLES AUGUSTIN (1736–1806). A French physicist, celebrated for his researches particularly in electricity and magnetism. He was born at Angoulême in 1736 and in early life became an officer of engineers. In 1777 he gained a prize by an essay on the construction of magnetic needles (*Sur les aiguilles aimantées*). In 1779 his *Théorie des machines simples* gained the prize offered by the Academy, and in 1781 he was a third time successful in an essay on the friction and resistance of cordage, etc., used in machines. In the same year he was elected a member of the Academy, and his services were employed on all the most difficult problems in mechanics. He is known as the inventor of the torsion balance (q.v.), by which the attraction of electricity and magnetism can be measured, while his memory has been perpetuated by the use of his name for the unit of electric quantity. Having offended certain influential persons by reporting unfavorably on a project for a navigable canal in Bretagne, Coulomb was for some time imprisoned, but received from the states of Brittany a present of a handsome watch, as a reward of his firm opposition to an expensive and unprofitable scheme. He lived in retirement during the Revolution, but took part in the investigations attending the introduction of the metric system of weights and measures by the new government, being a member of the commission of 12 appointed under the provisions of the Law of April 7, 1795.

COULOMMIERS, kōō'lō'myā'. The capital of an arrondissement and a garrison town in the Department of Seine-et-Marne, France, on the Grand-Morin, 38 miles east of Paris (Map: France, N., J 4). Its parish church of St. Denis dates from the thirteenth century, and it has remains of a castle built in 1613. There is a monument to the heroic Beaurépaire, who killed himself in 1792 rather than surrender the town of Verdun. It boasts a college, library, and museum of antiquities. Printing is the chief industry. It has woolen mills, tanneries, flour and sugar mills, and manufactories of starch and cheese. Market gardening is largely carried on. Jean de Boullonge or Le Valentin, the artist, was a native of Coulommiers. Pop., 1901, 6505; 1911, 7224.

COULTER, kōl'tēr, JOHN LEE (1881–). An American statistician, born at Mallory, Minn. He was educated at the universities of North Dakota, Wisconsin, and Minnesota, and at Iowa State College. Between 1907 and 1909 he was an instructor at Iowa State College, the University of Wisconsin, and the University of Minnesota, where he also served for two years as assistant professor of rural economics. From 1910 to 1912 he was expert special agent of the United States Census Bureau, and during the same period he also lectured at George Washington University. He is author of *Economic History of the Red River Valley of the North* (1910); *Co-operation among Farmers* (1911); *The Problem of Rural Credit, or Farm Finance in the United States* (1913).

COULTER, kōl'tēr, JOHN MERLE (1851–). An American botanist and educator, brother of Stanley Coulter, born at Ningpo, China. He received his education at Hanover College, Ind., and subsequently studied at Harvard. After serving for two years (1872–73) as botanist to the United States Geological Survey in the Rocky Mountains, he was made professor of natural science at Hanover College, where he

remained for five years. He was appointed professor of biology at Wabash College in 1879; from 1891 to 1893 he was president of Indiana State University, and from 1893 to 1896 he presided over Lake Forest University. In 1896 he became head of the department of botany in the University of Chicago. His works include: *Manual of Rocky Mountain Botany* (1885; rev. ed., 1909); *Manual of Texan Botany* (1892-93); *Plant Relations* (1899; 3d ed. rev., 1910); *Plant Structures* (1899; 2d ed., 1904); *Morphology of Spermatophytes* (1901) and *Morphology of Angiosperms* (1903), with Charles J. Chamberlain; *Plant Studies* (1902; rev. ed., 1905); *A Text-Book of Botany* (1906); *Elementary Agriculture* (1909); *Morphology of Gymnosperms* (1910); *A Text-Book of Botany for Colleges and Universities* (2 vols., 1910-11); *Elementary Studies in Botany* (1913); *Plant Breeding* (1914). In 1875 he founded the *Botanical Gazette* and thereafter continued to be its editor. He had charge of the department of botany in the first (1903) and second (1914) editions of the *NEW INTERNATIONAL ENCYCLOPÆDIA*.

COULTER, STANLEY (1853-). An American biologist, brother of John M. Coulter, born at Ningpo, China. He was educated at Hanover College. In 1887 he was appointed professor of biology and director of the biological laboratory at Purdue University and in 1907 dean of the School of Science. In 1902 he became a member of the State Board of Forestry. His publications include more than 125 pamphlets on nature study, scientific researches, sketches, and also *Flora of Indiana* (1899), and *A Key to the Genera of the Native Forest Trees and Shrubs of Indiana* (1907).

COUMARIN, kōō-mā-rin. See CUMARIN.

COUMOUNDUROS, kōō-mōōn-dy'ros. ALEXANDROS. See KUMUNDUROS.

COUNCIL (OF, *concile*, *council*, Lat. *concilium*, from *com-*, together + *calare*, Gk. *kalein*, *kalein*, to call). In Church usage, an assembly of ecclesiastical dignitaries held for the purpose of regulating the doctrine or discipline of the Church. As early as the second century Church councils were convened in which only one or two provinces took part, the bishops and presbyters binding themselves to carry out the decisions arrived at in their own communities. These assemblies were commonly held in the chief town or metropolis of the province, and the bishops of such capitals—who, after the third century, bore the title of *metropolitan*—were wont to preside over the meetings and to consider questions of doctrine and discipline which had arisen within the territory. Over these metropolitan councils were established, at a later period, the provincial synods, exercising authority over several united provinces, and, finally, the national councils. After the fourth century, when the Christian religion was established in the Roman Empire, we read of *ecumenical*, i.e., universal councils, so called because all the bishops of Christendom were invited or summoned by the Emperor. In some early synods we find bishops, presbyters, and others taking part in the deliberations; but after the opening of the fourth century only the bishops were convened. According to the doctrine of the Roman Catholic church, the Pope alone, or, by way of exception, in some cases the College of Cardinals, had the power of convening ecumenical councils, which, in the Catholic view, represent the universal Church under the guidance of the Holy Ghost.

Questions were determined by the majority of votes, and the Pope or his proxy presided and confirmed the resolutions carried in the council. In matters of faith the Holy Scriptures and the traditions of the Church were the guide, while in lighter matters human reason and expediency were consulted. In the former, ecumenical councils are held to be infallible, but in other matters of discipline, etc., the latest council decides questions. The question of the Pope's subordination to the decrees of the ecumenical councils was long and warmly debated during the Middle Ages, but is not asserted by any Roman Catholic theologian to-day.

Twenty ecumenical councils are recognized by the Roman Catholic church. 1. The first Council of Nicea, held 325 A.D., in the height of the Arian controversy to define the doctrine of the Godhead of Christ, and to settle the proper time of keeping Easter (q.v.) against the Quartodecimans. 2. The first Council of Constantinople (381) completed the Nicene symbol by the definition of the Godhead of the Holy Ghost. 3. The Council of Ephesus (431) defined the unity of person in God the Son, against Nestorius, and guarded the definition by applying the term *θεωτόκος*, *theotokos*, to His mother. 4. The Council of Chalcedon (451), against the opposite heresy of Eutyches, asserted the twofold nature of Christ. 5. The second Council of Constantinople (553) condemned some survivals of Nestorianism. 6. The third Council of Constantinople (680-681) condemned the Monothelites. 7. The second Council of Nicea (787) was directed against the iconoclasts and defined the respect to be paid to images. 8. The fourth Council of Constantinople (869-870) was called to secure the peace of the Eastern and Western churches, by the deposition of Photius, who had unjustly intruded into the see of Constantinople. The following councils, all held in the West, were subsequent to the schism between the Eastern and Western churches, and are consequently not recognized as ecumenical by Easterns or by Anglicans. Over the next seven councils, four held in Rome and three in southern France, the popes presided in person, without Imperial co-operation; they were held now, not so much to condemn heresy as to deal with other pressing needs of the Church, such as the encroachments of the Imperial power and reform in ecclesiastical discipline. 9. The first Lateran Council (1123) was called to settle the dispute between the spiritual and temporal powers on the question of investiture. 10. The second Lateran Council (1139) condemned the errors of Arnold of Brescia and others. 11. The third Lateran Council (1179) condemned the Albigenses and Waldenses and passed a number of reforming decrees. 12. The fourth Lateran Council (1215), the most important ecclesiastical gathering of the Middle Ages, formulated a more detailed confession of faith in opposition to the Albigenses and other innovators, and passed 70 reforming decrees. 13. The first Council of Lyons (1245) threatened the Emperor Frederick II with excommunication and deposition and called on Christendom to take up arms against the Mohammedans. 14. The second Council of Lyons (1274) strove for the reunion of the Greek and Latin churches and regulated papal elections. 15. The Council of Vienne (1311-12) suppressed the Knights Templars and condemned various sects of the time, such as the Fraticelli and Beghards. 16. The Council of Constance

(1414-18) was called to restore the unity of the Church by the recognition of a legitimate pope and condemned the doctrine of Wiclif and Huss. 17. The Council of Basel, convoked in 1431 and later removed to Ferrara and Florence, discussed ecclesiastical reformation and made a determined attempt, in consultation with Greek deputies who came to Florence, to bring about a union with the East. 18. The fifth Lateran Council (1512-17) annulled the Pragmatic Sanction and confirmed the bull *Unam Sanctam*, besides occupying itself with ecclesiastical discipline. 19. The Council of Trent (1545-63, with some interruptions), called to meet the problems presented by the Reformation, was very rich in consequences both for the confirmation of doctrine and the establishment of discipline. 20. The Vatican Council (1870) decreed the infallibility of the Pope. For further details of important councils, see NICÆA; BASEL; CONSTANCE; TRENT; CHALCEDON; CONSTANTINOPLE; EPHESUS; LATERAN; LYONS; VATICAN.

Among Congregationalists and Baptists the term "council" is applied to an assembly of ministers and delegates from neighboring churches, called by a local church, as occasion arises, to act or assist in ordaining a minister, or give advice on matters referred to it, beyond which its power does not extend. They have also a national council, composed of delegates from all parts of the denomination and meeting for conference concerning its work. The Pan-Presbyterian Alliance, as the association of the reformed churches holding the Presbyterian system is called, holds a council every four years for conference on matters of general interest to the allied churches. So the Evangelical Alliance, a loose, undenominational body, holds councils, and the Methodists throughout the world held one in 1901.

In England, the convocations of the Church of England are practically councils, while the dissenting bodies are represented in the Free Church Council, meeting annually.

The great history of the councils of all kinds from the Apostolic age to the Council of Trent is by C. J. Hefele, assisted in the latter part by A. Knöfler and Cardinal Hergenröther (9 vols., Freiburg, 1855-90); there is an English translation by Clark and Oxenham of the first two volumes, and up to the eighteenth book of the original (4 vols., Edinburgh, 1871 et seq.). Consult also the great collection of canons and other acts of the councils, by G. D. Mansi (31 vols., Florence and Venice, 1759-98). A study of the first seven ecumenical councils from a doctrinal standpoint is presented by W. P. du Bose (New York, 1897), and their *Canons and Dogmatic Decrees*, annotated with much additional matter, all in English, by H. R. Percival (ib., 1900). See SYNOD.

COUNCIL, PRIVY. See PRIVY COUNCIL.

COUNCIL BLUFFS. A city and the county seat of Pottawattamie Co., Iowa, 5 miles east of Omaha, Neb., near the Missouri River, and on the Union Pacific, the Chicago and Northwestern, the Chicago, Burlington, and Quincy, the Chicago, Rock Island, and Pacific, the Illinois Central, the Chicago, Milwaukee, and St. Paul, the Chicago Great Western, and the Wabash railroads (Map. Iowa, B 3). The city is well laid out, with brick-paved streets, and lies to a great extent on a plain underlying high bluffs. Electric lines connect Council Bluffs with Lake Manawa, a beautiful summer resort 3

miles south of the city, and with Fairmount and other parks. Council Bluffs is the seat of the Iowa School for the Deaf, and has a fine public-library building. Railroad and wagon bridges over the Missouri, and electric lines, afford communication with Omaha, with which city there is extensive traffic. The exceptional railroad facilities of Council Bluffs make it an important manufacturing and transportation point. It is one of the great agricultural-implement trade centres of the world and also has a large trade in fruit and produce. There are eight large grain elevators. The city government, under a general State incorporation law, revised in 1897, is vested in a mayor, elected for two years, and a city council, composed of representatives from the six wards of the city and two members at large. The water works are owned and operated by the municipality. In 1804, on the site of Fort Calhoun near by, Lewis and Clark conferred with the Indians—hence the name. Here, in 1846, the Mormons established a settlement, called "Kaneshville," which, however, they soon abandoned for Salt Lake City. The city was chartered in 1850. Pop., 1900, 25,802; 1910, 29,292.

COUNCIL GROVE. A city and the county seat of Morris Co., Kans., 24 miles northwest of Emporia, on the Missouri, Kansas, and Texas, and the Missouri Pacific railroads, and on the Neosho River (Map: Kansas, F 3). It is in a fertile agricultural and stock-raising region, and has important dairying interests. The city is situated on the old Santa Fe trail. It contains a public library. Council Grove was settled in 1847 and is one of the oldest towns in the State. It adopted the commission form of government in 1911. Pop., 1900, 2265; 1910, 2545.

COUNCILMAN, WILLIAM THOMAS (1854-). An American pathologist, born at Pikeville, Md. He was educated at St. John's College (Annapolis, Md.) and at the universities of Maryland, Vienna, and Leipzig. From 1886 to 1891 he was associate and associate professor of pathology at Johns Hopkins University. In 1892 he became Shattuck professor of pathological anatomy at Harvard University. In 1904 he was president of the Association of American Physicians. His publications include: *A Study of the Bacteriology and Pathology of Two Hundred and Twenty Fatal Cases of Diphtheria* (1901); *Pathology* (1902); *Pathology: A Manual for Teachers and Students* (1912); *Disease and its Causes* (1913).

COUNCIL OF ANCIENTS. See DIRECTORY.

COUNCIL OF BLOOD. See ALVA.

COUNCIL OF FIVE HUNDRED. See DIRECTORY.

COUNCIL OF TEN (*Consiglio di dieci*). The supreme body in the Venetian government from the beginning of the fourteenth century till the overthrow of the republic in 1797. The creation of the Council of Ten was but the final step in the process by which the oligarchic party succeeded in obtaining sole control of the government, beginning with the so-called "Closing of the Grand Council" in 1297. Its immediate cause was a popular uprising in 1310 headed by the noble families of Tiepolo and Querini. After the suppression of the revolt the Council of Ten was constituted as a secret body for the purpose of discovering and punishing all the participants in the conspiracy. Created at first for a few days, its existence was prolonged from time to time until, in 1335, it was

made permanent. In times of great emergency the council was augmented by a *giunta* of 20 or more of the noblest citizens, so that until 1595 it was officially known as the *Consiglio di dieci e giunta*. The powers exercised by the council were unlimited and touched upon every affair of public and private life. Its decisions, from which there was no appeal, were arrived at in secret, and its sentences were often carried out in the same manner. It employed assassins and used poison to remove dangerous individuals. In spite, however, of its arbitrary acts and the relentlessness with which it visited punishment upon those who offended it, the Council of Ten insured internal tranquillity and the administration of justice and preserved the state against the ambition of powerful nobles. In 1539 the discovery of treasonable behavior on the part of certain of the Ten led to the creation of the *Inquisitori di stato*, or Council of Three, to whom the council delegated its police functions and the trial of offenders. From 1527, possibly earlier, the council exercised a censorship over the press. The archives of the council, extending from 1315 to the end of the republic, are of great importance, as they deal with political, ecclesiastical, and criminal subjects. "There we find such papers as still survive in connection with the cases of the Carrarisi, of Carmagnola, of Foscari, of Caterina Cornaro, and of Foscari." Consult Brown, *Studies in Venetian History* (2 vols., London, 1907).

COUNCIL OF THE INDIES. THE. A governing council formed in 1511 by King Ferdinand for the regulation of Spanish colonial affairs.

COUNCIL OF WAR. A conference of officers in war time, whom the commander voluntarily calls together to discuss matters of moment. It is an unwritten but generally understood rule that the commandant of a garrison will accept, or at least solicit, the opinion of a council of war before surrendering to an enemy.

COUNCILS, COUNTY. See COUNTY COUNCILS.

COUNSEL (OF. *conseil*, *cunseil*, *consel*, from Lat. *consilium*, consultation, from *consulere*, to consult). A term applied to attorneys and counselors who become associated together in the conduct of a cause at any stage of the proceedings, or who jointly act as legal advisers in any matter, whether litigated or not. It is less frequently used in speaking of a single lawyer acting in any of the above capacities. The term "of counsel" is employed to designate a lawyer who assists the attorney of record in the management, trial, and conduct of a case. See ADVOCATE. ATTORNEY; LAWYER.

COUNSEL, BOOK OF GOOD. See HITTAPADESA.

COUNSELOR. In law, a person admitted to practice law in any capacity, and who is by reason of that fact an officer of the court. The term was formerly used to distinguish those lawyers who were licensed to appear in court, corresponding to the barrister in England and the advocate in Scotland. The distinction has, however, been abolished in most, if not all, of the United States, and the term "counselor" is now used synonymously with "attorney." See ATTORNEY; LAWYER.

COUNT (OF. *conte*, *comte*, Fr. *comte*, from Lat. *comes*, companions, from *com-*, together + *ire*, Gk. *leuai*, *venai*, Skt. *i*, to go). In classical writers down to the end of the fourth century the meanings attached to the word *comes* were comparatively few and simple. At first the word signified merely an "attendant," and differed

from *socius* chiefly in expressing a less intimate and equal relation to the persons accompanied. A little later, in Horace's time, it was applied to those young men of family whom it had become customary to send out as pupils under the eye of a governor of a province or the commander of an army. Very soon the fashion of having attendants at home was introduced. The Emperor had many *comites* in this sense, and to these, as he gradually became the centre of power, he transferred the various offices of his household and of the state. The example of the emperors of the West was followed by the emperors of the East. Most of the titles at present applied to court officials are translations of the names applied to similar offices in the Byzantine Empire. The *comes sacrarum largitionum* was grand almoner and practically chancellor of the exchequer; the *comes curie* was the grand master of ceremonies; the *comes equestrum*, the grand equerry. The *comes marcarum*, or count of the marches, was the original of the later marquis.

In France the count of the palace (*comes palatii*) was the highest dignity in the state after the mayor of the palace, and in the eleventh century had already acquired a rank apart from that of the other counts. He presided in the court of the sovereign in his absence and possessed sovereign jurisdiction. The habit of instituting counts palatine was adopted by Spain and England. The counts of Chartres, Champagne, Blois, and Toulouse arrogated to themselves the authority to appoint palatine counts, and the ancient houses of Chartres and of Blois continued to claim in perpetuity the title of count palatine as that of their eldest sons. Counts of this sovereign class owed their origin to the feebleness of the later Carolingian kings, under whom they contrived gradually to convert the provinces and towns which they had governed as royal officers into principalities hereditary in their families. It was then that the counts came to be known by the names of their counties. The title was never used in England, though its Latin equivalent has always been the common translation for "earl," and the wife of an earl from a very early period has been styled "countess." For the history of the office in Germany, where it was of great importance, see GRAF. Consult: Rambaud, *L'Empire grec au X^e siècle* (Paris, 1870); Luchaire, *Histoire des institutions monarchiques de la France sous les premiers Capétiens* (ib., 1883); Maury, "La noblesse et les titres nobiliaires en France," in *Revue des Deux Mondes* (December, 1882); Pfaff, *Geschichte des Pfalzgrafenamtes* (Halle, 1847); Luchaire, *Essai sur l'origine de la noblesse en France au moyen âge* (Paris, 1902).

COUNTERCHANGED. A term in heraldry (qv.). When several metals and colors are interchanged, one being set against another, they are said to be counterchanged.

COUNTERCLAIM. In the law of pleading, an affirmative cause of action asserted by the defendant against the plaintiff and introduced in connection with his answer or defense proper. The counterclaim is a modern statutory device for enabling a person who is sued on a claim against him to procure an adjudication, at the same time, of a legal claim which he has against the party suing him. Its purpose is to consolidate the causes of action which two parties may have against one another, reducing the amount and cost of litigation and compelling the adjudi-

cation, so far as possible, of all open controversies between them. No such practice existed at common law, but every claim, no matter how closely related to another and opposing claim, constituted a separate cause of action and had to be separately prosecuted. As early as the year 1729, however, an act of the British Parliament introduced the principle of the set-off (q.v.), whereby, in case of mutual indebtedness growing out of the same transaction, the defendant was enabled to set off his claim against that of the plaintiff and have it allowed on the judgment. It was not until the Judicature Acts in 1875, however, that the defendant acquired the right of setting up a counterclaim, constituting a distinct cause of action.

Both the set-off and the counterclaim exist in the United States, the former generally, but the latter only in the so-called "code States," which have adopted the reformed procedure. These differ among themselves, however, as to the nature of the actions which can be pleaded by way of counterclaim—some following the modern English practice, under which any cause of action, however divergent from that alleged in the complaint, may be set up, and others, like New York, limiting the right of counterclaim to a matter arising out of the same transaction as that on which the action is based, or, in an action on contract, any other cause of action on contract (New York Code of Civil Procedure, § 501). See PLEA, PLEADING; RECOURSEMENT; and consult the authorities referred to under PLEADING.

COUNTERFEITING (from *counterfeit*, from OF, Fr. *contrefait*, counterfeit, from ML. *contrafacere*, to imitate, from Lat. *contra*, against + *facere*, to make). The criminal offense of falsely and fraudulently making an article in the semblance of another with the intent to induce the acceptance and use of such spurious article for the genuine one. The term "counterfeit" is used most frequently of imitations of coined money or of the paper currency of the government or of a bank, but is applied also to other cases of fraudulent imitation, as spurious trade-marks or dies. The most important British statute on this topic is the Coinage Offense Act, 1861 (24 and 25 Vict., c. 99). In this country the subject is dealt with in the Revised Statutes of the United States (§§ 5413 et seq.), especially so far as it relates to Federal coinage and securities and the money or securities of foreign nations; and other forms of counterfeiting are made punishable by State legislation. See COINAGE; FORGERY.

COUNTERIRRITANTS. Medical agents applied to the skin so as to reddens (rube-facients), to vesicates (blisters or vesicants), or to produce pustules, purulent issues, or even sloughs of skin and of the subcutaneous textures (pustulants). Counterirritants act by reflex influence upon central nerve centres which control the blood supply to diseased internal organs or deep-seated structures. The milder counterirritants are mustard, turpentine applied on hot cloths, and tincture of capsicum. The stronger are blisters of cantharides or of ammonia; croton oil or tartar emetic in ointment; and the actual cautery or hot iron. Setons, moxæ, and caustics are rarely, if ever, employed. None of the stronger counterirritants should be used without medical advice, great mischief being done by their improper use. Counterirritants relieve internal pain and tend to promote the absorption of effusions. They should be applied at a distance from the site of

the inflammation. Counterirritants are much used for strains and diseases of the joints in horses, but should never be applied, as they too often are, in recent cases, or while the part is hot or inflamed. Preparations of cantharides (q.v.) and ointment of mercuric biniodide (red iodide of mercury) are the most convenient. For cows, use hot fomentations, followed by the smart infraction of mustard paste; for dogs, soap liniment, strengthened, if required, by ammonia or turpentine. See MOXA.

COUNTERMINE. See MINES AND MINING, MILITARY.

COUNTERPASS/SANT (Fr. *contre-passant*, passing opposite, from *contre*, Lat. *contra*, against + *passer*, ML. *passare*, to pace, from Lat. *passus*, step, from *pedere*, to stretch). In heraldry (q.v.), a term denoting two beasts bound in opposite directions passing each other.

COUNTERPOINT. In music, the setting of one or more parts against a given melody, so that all the voices are of equal importance and independence. The name was first used in the fourteenth century. It suggested itself from the fact that one note (*punctus*) was set against another, *punctus contra punctum*. A counterpoint may be written in various ways against a given melody, as one, two, four, or even more notes against one of the cantus. The counterpoint most useful in practical composition is one where the different parts are variously constructed, as in the following (Handel):



When two voices are used the counterpoint is called two-part; when three, three-part, etc. When the counterpoint lies uniformly above or below the cantus, it is single. If the parts be constructed in regard to one another so that they can be changed or transposed over or under each other, without alteration in the movement, or injury to the harmony, it is then called double counterpoint, e.g.:



The intervals most frequently used for transposition in double counterpoint are the octave, decima, and duodecima. The following admits of different transpositions:



When three voices are constructed so that they can be exchanged one against the other, the counterpoint is triple; when four, quadruple. The first indications of counterpoint we find in the thirteenth century in the works of Adam de la Hale. The development of the art of contrapuntal writing was then very rapid, and in the school of the Netherlands (in the fifteenth and sixteenth centuries) the acme of technical skill was reached. But counterpoint was then less a genuine musical art than an exhibition of astounding technical tricks. The great Italian schools (see *PALESTRINA*) returned to a simpler and artistic style. As a genuine art counterpoint culminated in the form of the fugue (q v). The latest and best treatises on counterpoint are those of Deln, Richter, Marx, Lobe, Prout, Jadassohn, and Riemann.

COUNTERPOISE CARRIAGE. See *ORDNANCE*.

COUNTERPO'TENT. A fur used in heraldry (q v).

COUNTERPROOF. An impression which is obtained from a freshly printed proof of an engraving, by laying it, before the ink is dry, upon plain paper and passing it through the press. By this means the ink is transferred from the wet proof to the plain paper, and a reversed impression is obtained, which is often of use in enabling the engraver to judge of the success of his work. See *ENGRAVING*.

COUNTER-REFORMATION. The term used to describe the period of Catholic revival between about 1560 and 1648. The Catholic church undertook (1) to reform abuses, (2) to counteract the Protestant movement in those lands where it threatened to succeed, and (3) to uproot it where it had entirely or very considerably succeeded. Long before the Protestant revolt took place there had been a demand upon the part of faithful sons of the Church for a reform in "head and members," from the Pope down to the humblest Christian. Efforts had accomplished something, as in the Council of Basel (1431), but not enough to stay the tide of unrest. At last the Council of Trent was assembled, which, lasting with interruptions from 1545 to 1563, solemnly reaffirmed and defined Catholic doctrine and enacted disciplinary measures to rectify widespread and prevalent abuses. Of the agents most active in raising the tone of

the Church, animating its pulpit and its schools, and inspiring self-sacrifice and ardent piety, the chief have been the Jesuits—so much so, indeed, that the counter-reformation is frequently spoken of as their work. The other measures spoken of have naturally incurred more censure. The check or extirpation of Protestantism has been accomplished necessarily with violence, though it must be said that the intolerance of the Roman Catholic ruler or prelate was matched, when opportunity served, by that of Protestants in similar positions. In Bavaria the nobility which had favored Protestantism were expelled in 1564. At Treves the Elector, James of Eltz, in 1572, forbade Protestants his court. In other ecclesiastical states of the Empire, as Bamberg and Salzburg, the rulers drove out the evangelical clergy and gave the laity the alternative of conformity to the Catholic church or exile. Austria attempted to uproot religious liberty in Ilungary, but was forced to restore it. In Bohemia Protestantism was extirpated during the Thirty Years' War. As far as the German Empire was concerned, the arbitrary exercise of power to repress Protestantism ended with the Peace of Westphalia in 1648. In such countries as Spain and Italy Protestantism never had more than a feeble existence and so was rather easily suppressed by the Inquisition. In France there was never more than a possibility of Protestantism gaining an ascendancy, but in the sixteenth and seventeenth centuries it had many influential adherents. Civil wars, the result of political intrigue, and the acceptance from personal ambition of Romanism by Henry IV, ruined whatever prospects the Protestants had; and with the revocation of the Edict of Nantes in 1685, all semblance of state favor to Protestantism was removed and the faith outlawed. In the Netherlands persecution and war wrested the southern provinces from Protestant domination, but it remained in the northern. Scandinavia was not seriously shaken in her acceptance of Protestantism. In England, after tireless, ingenious, and heroic attempts of seminary priests, upon whose head a price was fixed, to effect a return to Catholicism, with the secret cooperation of many nobles and other prominent men, the scheme had to be abandoned, mainly because the invasion of England by the Spanish Armada in 1588 welded the nation into a whole against foreign political or religious dominion. This was also the period of greatest heroism and success in Catholic missions.

Consult: Ranke, *History of the Popes* (Eng. trans., London, 1867); A. Ward, *History of the Counter-Reformation* (New York, 1889); A. R. Pennington, *History of the Counter-Reformation* (London, 1900).

COUNTERSCARP. The side of the ditch of a fortification opposite to the parapet. The slopes of the scarp, which is the side of the ditch next to the parapet, and of the counterscarp will depend on the nature of the soil, and the action on it of frost and rain. The scarp, or outside slope of the parapet, is less steep than the counterscarp, because it has to sustain the weight of the parapet. See *FORTIFICATION*.

COUNTERSIGN. A watchword or sign disclosed only to persons authorized to pass a line of sentinels. The countersign may be changed at any moment, or any number of times, but is usually altered each 24 hours. It is given primarily to commanders of guards, and outposts and their sentries, to reconnoitring and visiting

patrols, and to the field and regimental officers of the day. All others desiring to pass through the lines must first be supplied with the countersign, which is thus a guard against spies, strangers, and surprise.

COUNTERSUBJECT. A musical term. See FUGUE.

COUNTERTENOR. The highest adult male voice; most commonly the male alto (q.v.).

COUNTERVAIR. A fur used in heraldry (q.v.).

COUNTRESS'S POWDER. See CINCHONA.

COUNTIES CORPORATE. In England, cities and towns which possessed the privilege of being governed by their own sheriff and magistrates independently of the county in which they are situated.

COUNTING-OUT' RHYMES. See NURSERY RHYMES.

COUNT ROBERT OF PARIS. A late novel of Sir Walter Scott (1833), the scene of which is laid at Constantinople in the eleventh century.

COUNTRY-DANCE. An old English dance of rustic origin, in lively movement, usually in 2-4 time (occasionally 6-8). It was performed by several pairs dancing against one another. Originally the music was performed on a bagpipe or fiddle or a pipe and tabor. When introduced into refined society, the music became more refined and was written for orchestral instruments. The oldest collection of country-dances was published in 1651 under the title, "The English Dancing Master." In the eighteenth century it was introduced into France, where it was first known as *Anglaise*. From the fact that the couples danced against one another it also was called *contredance*. From France it soon spread to Germany, where it became exceedingly popular, and was known under its French name. The etymology regarding *contredance* as a corruption of *country-dance*, or vice versa, is wrong.

COUNTRY LASSES, or THE CUSTOM OF THE MANOR. The title of a play by Charles Johnson (1715), based on Fletcher and Massinger's *Custom of the Country* and Middleton's *A Mad World, My Masters*.

COUNTRY PARTY, THE. The anti-Royalist party in England in Charles II's time, which opposed the court party. It finally developed into the "Whig" party.

COUNTRY WIFE, THE. A comedy by Wycherley (1673), drawn largely from Molière's *L'Ecole des maris* and *L'Ecole des femmes*.

COUNTY (OF. *countee*, *contee*, Fr. *comté*, It. *contado*, from Lat. *comitatus*, county, escort, from *comes*, count, companion) Either (a) one of the civil divisions of a country, for judicial and political purposes; or (b) a local subdivision of a state created by the sovereign power of its own will; or (c) a "local organization which, for the purpose of civil administration, is invested with the functions of a corporate existence." The Saxon term was "shire," a name still preserved in England. In the United States counties are divided into a number of townships or towns. Cities and incorporated towns and villages are, generally speaking, subdivisions of counties and townships, but in some instances a city may be geographically coterminous with a county, as is the case with St. Louis and Philadelphia, while "the city of New York" includes within its municipal limits five distinct counties. In Louisiana the similar division is called a "parish." For purposes of

local government, each county has at least one court and one prison and usually an almshouse. The smaller divisions are townships, or precincts, according to the system of local government, each of which by popular suffrage chooses supervisors or commissioners, who form an administrative board to conduct the financial and other county affairs. Counties are the creatures of the legislative will. They are vested with certain corporate powers in order to enable them to perform the duties required of them as part of the machinery of the state; and, inasmuch as all their powers are derived from the legislature, the latter may enlarge, modify, or diminish them at any time. Counties are generally invested with the following corporate powers: to sue and be sued by a corporate name; to have a county seat, a courthouse, and prison; to acquire and hold title to real estate; to levy taxes and to make such contracts as may be necessary for their corporate existence. For an historical sketch of the English county, consult Pollock and Maitland, *History of English Law* (2d ed., Boston, 1899). See SHIRE; MUNICIPAL LAW, and consult authorities there referred to.

COUNTY COUNCILS. Until 1888 the county government of England was conducted in the quarter sessions, held by justices of the peace. As these magistrates were appointed by the crown to attend to all administration and the minor judicial business of the county, there was practically no local self-government. To remedy this, the first Local Government Act was passed in 1888 by a Conservative ministry. It established representative county councils elected every three years by all ratepayers, male and female, of the shire, besides other nonresident property holders, under certain conditions. Practically the same qualifications are necessary for membership in the council, except that women are not eligible. The elected councilors choose additional members called "aldermen," one-third of the council in number, and also a mayor, who may or may not be of their number. The council controls all the administrative functions of the county, such as the management of the roads, insane asylums, county jails, and the issue of liquor licenses; it shares the police control with the justices of the peace.

Mr. Henry Fowler's second Local Government Act, passed by the Liberals in 1894, perfected the first by transforming the ancient vestries of a population of 300 and over into parish councils, for the management of local business. Smaller parishes, if they so desire, may, with the consent of the county council, have the same privilege. The system closely resembles the American township organization. In Scotland and Ireland counties have since been organized along similar lines, except that there are no coopted aldermen in the former country.

Previous to 1885 all London lying within the ancient city had no local government except the church vestries. It was brought under the operation of the Act of 1888 and given a county government. In 1899 the administrative functions of the vestries not ecclesiastical were turned over by the county council to subordinate boroughs having mayors, aldermen, and councilors of their own. The old city, though represented in the county council, retains most of its antiquated constitution. The personnel of the London County Council is very high, and the amount of work it has accomplished is remarkable. It has successfully provided public baths

and libraries, parks and playgrounds, better dwellings for the poor, besides giving large sums for technical education. Consult Macmorran and Dill, *The Local Government Act of 1894* (London, 1896).

COUNTY COURT. In English and American law, a judicial tribunal of considerable dignity and importance, whose jurisdiction is co-extensive with the limits of a county (q.v.). The county courts are among the most ancient institutions in England, dating back to the popular tribunals of the Anglo-Saxon period. We find provisions regulating their procedure as far back as the laws of Edward the Elder (901-925) and of Canute (1014-35). Under the system of local self-government which was characteristic of that period, the county courts (*shire gemots*) were the chief ordinary tribunals of the English people, their judicial authority being superseded by that of the *Witenagemot*, or Great Council of the Kingdom, only for particular purposes and on rare occasions.

It will be remembered that in England the county, or shire, is not merely a political subdivision of the state for administrative purposes, as it is in most cases in the United States, and as are the departments into which the territory of France is divided; but it is a separate and distinct political division, in many cases antedating, in organization and in its functions, the state itself. As the supreme judicial tribunal, therefore, of such an ancient political organization, the county court was not only the fountain of justice for the people of England, high and low, but a court of great dignity and authority as well. It was presided over by the sheriff (*shire reeve*), who was the high judicial officer of the county, and, like the court baron and other popular tribunals, was composed of the freeholders of the county who should be summoned by the sheriff for that purpose. Its original jurisdiction extended to all civil and criminal matters, and it was the common court of appeal from all the minor courts of the county. Under the Saxon régime there was no regular tribunal of appeal from the judgments of the county court, but after the Conquest the superior authority of the new national tribunal, the *Curia Regis*, or King's Court, drew to it appeals from the county courts. The rapid growth in power and importance of the King's courts, especially of the so-called common-law courts—the King's Bench, Common Pleas, and Exchequer—tended to reduce the authority of the more ancient tribunals, and their jurisdiction was impaired by successive acts of Parliament. They still exist, however, with a limited though considerable authority. See County Courts Act, 1888 (51 and 52 Vict., c. 43).

County courts in the United States exercise both civil and criminal jurisdiction, and in some of the States the functions of probate, or surrogates, courts as well. They are held by a county judge, usually at the county seat or principal town of the county. The county judge is usually elected by popular vote for a specified term. See COURT. See also CURIA REGIS; SHERIFF. Consult *Encyclopedia of the Laws of England* (London, 1897), and Raikes, *Admiralty Jurisdiction and Practice in County Courts* (ib., 1896).

COUP, *koo* (Fr., stroke). A word often used in a figurative sense. *Coup d'état*, 'stroke of state,' means an arbitrary encroachment suddenly effected by the governing authorities upon the constitution of the state, altering or setting

aside the prerogatives of other parts of the body politic. The *coup d'état* which is usually understood by this term is that effected by Louis Napoleon in making himself practically dictator (Dec. 2, 1851). *Coup de main*, a 'stroke of the hand,' is applied, in the language of war, to a sudden and successful attack. *Coup de foudre*, a 'thunderbolt,' applied figuratively to any astonishing occurrence. *Coup d'œil*, a 'stroke (or glance) of the eye,' is applied in speaking of persons who have the faculty of comprehending all the relations of a complicated matter at one survey; or, in art, it expresses the general effect of a picture or group at first sight. *Coup de théâtre* means properly a trick of the stage to produce a shock by surprise, and is hence applied to any analogous dramatic effect.

The word is also used in Canada to designate a war custom of the Plains Indians. Among many of these tribes the first warrior to touch an enemy or his body was credited with a "coup," or deed of honor. The social rank of an individual was largely dependent upon the number of coups to his credit. Thus Red Cloud (q.v.) claimed 80 coups—an unusual number, since 4 coups were generally considered sufficient to give distinction. Consult Grinnell, "The Coup," in *American Anthropologist* (1911).

COUPÉ, *koo'pá'* (Fr., literally, section, cut, from *couper*, to cut). A four-wheeled, one-horse, closed carriage, holding two persons, with separate seat for the driver. (See CARRIAGE; MOTOR VEHICLE.) The name is also given to a compartment of a railway carriage in continental Europe.

COUPED, *koopt* (hybrid Eng., p.p. of Fr. *couper*, to cut). In heraldry, a term used to describe the head or any limb of an animal, or a part of a plant, represented as cut off smoothly from the trunk. It is distinguished from *erased*—i.e., forcibly torn off. A distinction is made also between *couped* and *couped close*, the latter signifying that the head or limb is cut off close, leaving no part of the neck or trunk attached to it. When crosses, bars, and bends are cut so as not to touch the sides of the escutcheon, they are also said to be coupé.

COUPER, *koo'pér*, WILLIAM (1853-). An American sculptor. He was born in Norfolk, Va., and studied at the Cooper Institute, New York, and the Royal Academy at Munich. In 1875 he removed to Florence and entered the studio of Thomas Ball. In 1897 he returned to America and established himself in New York. His art is modern Italian in manner, but its beauty and technique are somewhat marred by overelaborate detail and neglect of powerful lines and planes. His management of drapery is especially good. Among his works are "Mother's Love," "The Falconer," "Beauty's Wreath for Valor's Brow," the marble statue of "Moses" on the Appellate Courthouse, New York City, "Te Deum Laudamus," and several peculiarly sympathetic and exquisitely executed angels for funeral monuments. His portraits include the heroic bronze bust of Prof. Thomas Eggleston, Columbia University, New York, and that of President McKinley. He won the competition for the monument to Colonel Hawkins, at Pittsburgh, Pa. Consult Lorado Taft, *History of American Sculpture* (New York, 1903).

COUPERIN, *koo'p'-rân'*. The name of a family of famous French musicians.—The first members who became famous were three brothers, LOUIS (1630-65), FRANÇOIS (1631-

98), and CHARLES (1638-69). The latter's son, also called FRANÇOIS (1668-1733), was the greatest of all the Couperins, and is generally spoken of as *François le Grand*. He studied under J. Thomelin. In 1693 he was appointed court cembalist and teacher of the princes; and in 1698 he succeeded his uncle François as organist of Saint-Gervais, in Paris. As a composer Couperin occupies an important position in the history of piano music. His works for the harpsichord were not only the first of their kind, but also developed a new style of music, characteristic of the instrument, whereas his predecessors had cultivated the organ style. His compositions are not very profound, are overloaded with embellishments, but exerted a decided influence upon the style of his younger contemporaries, Llandel and Bach.

COUPLE (OF. *cuple*, *cople*, Fr. *couple*, Sp. *cópula*, from Lat. *copula*, bond, from *co-*, together + *apere*, Gk. *ἀρρεω*, *haptain*, to join). A couple is the name given in statics to a pair of equal parallel forces acting in opposite directions and at different points of a body. It is shown in the article MECHANICS (q.v.) that, when two parallel forces act in opposite directions on a body, they may be replaced by one equal to their difference, acting parallel to them and in the same plane with them, the point of application of this resultant being *beyond* the points where they are applied. This point recedes farther from the points of application of the original forces the nearer they approach equality, getting to an infinite distance when they become equal and when their resultant accordingly is zero. In this limiting case the forces constitute a couple. They have no tendency to *translate* the body; their action goes wholly to make it rotate about an axis passing through its centre of inertia and perpendicular to the plane in which the couple acts. Such being the case, a couple cannot be replaced or counteracted by any single force, for such a force would produce translation; it can only be replaced or balanced by other couples. The length of the straight line which meets the lines of action of the forces at right angles is called the "arm" of the couple, and the product of the arm and either force is called the "strength" or the "moment" of the couple. It is evident that a couple can be replaced by one of equal strength. Consult Routh, *Treatise on Analytical Statics* (Cambridge, Eng., 1892); Minchin, *Statics* (New York, 1892); Johnson, *Theoretical Mechanics* (ib., 1901); Ziwett and Field, *Introduction to Analytical Mechanics* (ib., 1912). See MECHANICS.

COUPLET (Fr., dim. of *couple*, pair, from Lat. *copula*, bond). Any two lines which rhyme together. They usually contain the expression of a complete idea. The poetic wits of the age of Queen Anne excelled in this kind of aphoristic versification. Pope, it has been said, reasons in couplets. For example:

"'Tis with our judgments as our watches, none
Go just alike, yet each believes his own."

COUPON, kōō'pōn (Fr. *coupon*, from *couper*, to cut, from *coup*, It. *colpo*, Lat. *colpa*, from Gk. *κόλαφος*, *kolaphos*, blow with the fist, from *κόλαπτειν*, *kolaptein*, to strike). An undertaking on the part of an obligor on a money bond or other interest or dividend bearing obligation to pay a definite amount of accrued interest or dividends to the holder thereof at a specified date. It is usually so attached to the bond, debenture,

or other principal instrument that it can conveniently be cut off (whence the name) and presented for payment. Each interest or dividend coupon constitutes in law a separate claim or demand and may be separately enforced. Corporate bonds and similar securities are usually issued in this form, and so, sometimes, are shares of preferred stock, in which case the coupons represent the guaranteed dividend payments. Of course the coupon does not, in any of these forms, confer any additional legal rights on the holder of the security against the person bound thereby nor increase the liability of the latter. A general agreement to pay interest or dividends at such a rate would be equally valid and efficacious. The advantage of the coupon lies in the convenience to the holder of furnishing him with a separate undertaking for each interest or dividend payment for presentment and collection, and in the fact that corporate coupons are usually of a negotiable or quasi-negotiable character, facilitating their transfer from hand to hand. See NEGOTIABLE INSTRUMENTS.

COURANT, kōō-rānt' (Fr., pres. part. of *courir*, to run). In heraldry, a term used for running.

COURANTE. An old French dance, originated about the middle of the sixteenth century. The oldest specimens are rather rapid, in 3-2 time, beginning on the beat. Later, the dance became confused with other dance forms of similar character, especially the 3-2 time (three beats) was frequently confused with 6-4 time (two beats). At the beginning of the eighteenth century it became one of the movements of the Suite (q.v.), where it usually follows the Allemande (q.v.), and is contrasted with it. At the same time the tempo became slower and, instead of proceeding mainly in notes of even value, dotted notes became the usual movement. The Italian form (*corrente*) always preserved the rapid tempo and even movement.

COURAYER, kōō'rā'yā', PIERRE FRANÇOIS LE (1681-1776). A French Catholic theologian. He is chiefly known for the part which he took in the discussion, which so interested Leibnitz and others at the time, on the possibility of the reunion of Christendom, and especially of uniting the Church of England with the Roman Catholic communion at the Reformation. In 1723 he published anonymously a *Dissertation sur la validité des ordinations des Anglais* (Eng. trans., London, 1725; new ed., Oxford, 1844), in which he endeavored to prove that there had been no break in the line of ordination from the Apostles to the English clergy. This was naturally received with enthusiasm in England, and Oxford conferred the degree of D.D. on him; but it subjected him to so much criticism and unpopularity in France that he presently fled to England, where he remained until his death. In 1736 he published a French translation of Sarpi's *History of the Council of Trent*, and in 1767 a translation of Sleidan's *History of the Reformation*.

COURBET, kōō'r'bā', AMÉDÉE ANATOLE PROSPER (1827-85). A French admiral, born at Abbeville. He was educated at the Ecole Polytechnique and entered the navy in 1849. In 1880 he was made rear admiral and, after being Governor of New Caledonia, in 1883 commanded the French fleet in the campaign of Tongking. After the violation of the Treaty of Tientsin by the Chinese, Courbet, in a naval engagement (1884),

destroyed the entire Chinese fleet without losing a vessel. In 1885 he started to return to France, but his strength had given out and he died at sea. Consult the biographies by Julien (1888) and De la Faye (1891); Loir, *L'Escadre de l'amiral Courbet* (Nancy, 1886); Cahu, *Courbet en Extrême-Orient* (Paris, 1896).

COURBET, GUSTAVE (1819-77). A French landscape, figure, and portrait painter, founder of the modern Realist school. He was born at Ornans (Franche-Comté) on June 10, 1819, of wealthy peasant parents. His first instruction in art was acquired at his home under Flageolet, a pupil of David. In his twentieth year he went to Paris, where he worked in different studios, but he was in the main self-taught. He speedily found recognition, and soon became the chief leader of the Realists, in opposition to both Classicists and Romanticists. Courbet was of a very independent character, and had so little regard for the opinions of the judges of the Salon that he returned for six successive years a picture rejected in 1841. When in the Exposition of 1855 his pictures were refused, he held a separate exposition, which attracted wide attention. In 1870 he returned the cross of the Legion of Honor to Napoleon with a protest. He was Radical and Socialist in politics, and under the Commune he was made director of the fine arts. As such he saved the collections of Thiers and of the Luxembourg from the infuriated populace, but he sacrificed the Vendôme Column in order to appease the crowd. For this act he was imprisoned after the downfall of the Commune, and all of his paintings were sold at public auction. In order to avoid the payment of further damages he went into voluntary exile, and died broken-hearted near Vevey, in Switzerland, Dec. 31, 1877. He was a strong but rather coarse character, blustering but good-natured—a healthy animal without the least spirituality.

His paintings portray nature exactly as it is, without the least addition of sentiment or idealism, for he conceived realism to be possible only through the absolute negation of idealism. As he confined himself to the reproduction of nature, there could be no refined composition or real action in his work, for these depend on the painter himself. His figures were no more than models in the positions painted, his landscapes mere patches of forest or country taken at random. In figure painting he was partial to the coarse types preferred by the Flemish school, and he always painted them life-size. His coloring was excellent, and in his figure subjects, which are chiefly brushworks, it was pure, strong, and mellow. In his landscapes he used the palette knife very freely, obtaining brilliant and sparkling effects of color. His chief defect is his lack of strength in drawing.

The volume of Courbet's work was enormous, and his activity extends over a variety of subjects. Among the best of his figure paintings are the "Man with a Leather Belt", (Louvre); the "Stone Breakers" (Dresden), representing two workmen breaking stones, as one can see them in the street; the "Demoiselles des bords de la Seine" (Petit Palais), two typical grisettes reclining in ungraceful attitudes on the grass, yet a picture of great beauty of color. The most ambitious of all is his "Burial at Ornans" (1850, Louvre), a village funeral. This picture is composed of 39 life-size figures, admirably balanced. On the one hand are the perfunctory

mourners, such as the priest, beadles, pallbearers, gravediggers; on the other, the real mourners. The Louvre also possesses two of his landscapes—the "Combat of the Stags" and the "Retreat of the Deer"—a marine painting, "The Wave," the portrait of Champfleury, and other of his works. In the Petit Palais are "The Father of the Artist," "Prudhon and his Children," and several others. In the Metropolitan Museum, New York, are "The Woman with a Parrot," a marine, and a landscape. Courbet is also represented in the chief provincial museums in France and in the galleries of Berlin, Frankfort, Cologne, Munich, Vienna, Amsterdam, The Hague, Copenhagen, and Chicago, and in many private collections, including the Widener and Johnson collections, Philadelphia, and the Allston Club, Boston.

Bibliography. Monographs on the art and life of Courbet have been written by Estignard (Paris, 1874), D'ideville (ib., 1878), Silvestro in *Les artistes français* (ib., 1878), Isham in Van Dyke's *Modern French Masters* (New York, 1896), Meier-Graef, *Corot and Courbet* (Leipzig, 1905), Cazier (Paris, 1906), Riat (ib., 1906), Muther (Berlin, 1906), Robin (Paris, 1909), Benedite (ib., 1911), and Lažar Béla (ib., 1911). Consult also Muther, *History of Modern Painting*, vol. ii (London, 1896, 1907); Patoux, "Courbet," in *Les artistes célèbres* and *La carrière sur Courbet* (Paris, 1879).

COURBEVOIE, koor'b'vwä' (Fr., crooked way). A town in the Department of Seine, France, on the left bank of the Seine, opposite Neuilly, 5 miles northwest of Paris. Courbevoie has well-built houses and large barracks erected by Louis XV for the Swiss Guards. In 1883 a bronze group, the *Monument de la défense de Paris*, by E. Barrias, was erected here. Its principal manufactures are white lead, brandy, carriage bodies, and drugs. Pop., 1890, 20,105; 1901, 23,765, (commune) 25,330; 1911, 38,138.

COURCEL, koor'sel', BARON ALPHONSE CHIRON DE (1835-). A French diplomatist. He was educated in France and Germany, and entered political and diplomatic life in 1859. From 1881 to 1886 he was Ambassador to Germany. In 1884-85 he was joint reporter with Baron Lambermont of the Berlin Conference. Courcel was an arbitrator appointed by the French President on the Bering Sea Arbitration Commission in 1892, and was elected president of that body by his associates. He became Senator in 1892, and was made Ambassador to Great Britain in 1894, but resigned in 1898. With Lair and others he edited for the Société de l'Histoire de France the *Mémoires de Richelieu* (2 vols., 1907-09).

COURCELLE, koor'sel', DANIEL DE RÉMY, SIEUR DE French Governor of Canada from 1665 to 1672. He succeeded Mézy and preceded Frontenac. In 1666, in the depth of winter, he led a force of 300 men by way of Lakes Champlain and George to the country of the Mohawks, who had persisted in attacks upon the colony. He returned, having accomplished nothing, and having lost a large number of his troops through the severity of the weather. Not long after, with Tracy, the lieutenant general, and an army of 1300, he undertook a second expedition, which resulted in the complete destruction of the five Mohawk forts. The English were considerably alarmed at this invasion of territory claimed for the British crown, and there ensued a correspondence between Tracy

and Governor Nicolls of New York. Courcelle projected the post at Kingston (Katarakoui), afterward established by Frontenac.

COURCELLE-SENEUIL, kōōr'sēl' se-nē'y', JEAN GUSTAVE (1813-92). A French political economist, born at Seneuil (Dordogne). He occupied the chair of political economy at the University of Santiago de Chile from 1853 to 1863 and became a member of the French Academy of Moral and Political Sciences in 1892. Among his principal publications are the following: *Traité théorique et pratique des opérations de banque* (1853; 6th ed., 1876); *Manuel des affaires* (4th ed., 1883); *Traité d'économie politique* (1858; 3d ed., 1890); and *Liberté et socialisme* (1868), in which, as in several others of his writings, he defends the principle of individualism. He translated into French the *Principles* of J. S. Mill and some of the writings of W. G. Sumner.

COURCILLON, PHILIPPE DE. See DANGEAU.

COURDE DE MONTAIGLON, A. DE. See MONTAIGLON, A. DE 'OURDE DE.

COUREURS DE BOIS, kōōr'ēr de bwā (Fr., wood runners). Canadian bushrangers of the seventeenth century who forsook their families and homes and took to the woods to engage in the beaver trade. The movement became so general that whole communities were virtually deprived of their male support, and much destitution ensued. Stringent measures to restrain the movement were taken by the French King, but without much result. The rangers, declared outlaws, built palisade forts at Detroit, on Lake Superior, and at various points in the West and Northwest.

COURIER, kōōr'i-ēr (OF., Fr. *courrier*, runner, from *courir*, Lat. *currere*, to run). A bearer of dispatches or letters, usually sent on public business. Such messengers were extensively used up to comparatively recent years—indeed, until the establishment of the postal and telegraph systems. Organized courier service existed among the Medes, Assyrians, and Egyptians from very early times, and relays of runners were employed by the ancient Greeks until the system of mounted couriers was introduced by the Persians. Among the Romans the change from runners to mounted men took place in the time of Augustus. During the Middle Ages, besides the staff of couriers in the service of sovereigns, the English and French nobility employed professional runners, called in France *laquais* and in England "running footmen." They wore an elaborate costume, and carried a long cane topped with a large, hollow silver apple containing provisions for the journey. Towards the middle of the fifteenth century formal permission was given to the government couriers of Germany and Spain to carry unofficial letters.

In modern times correspondence between diplomatic representatives and their home government is sometimes conducted by means of special couriers, who, unless they happen to fall into the hands of a hostile power in time of war, are considered inviolable messengers. The office of King's messenger in the English diplomatic service used to be an honorable and coveted position, but is now practically obsolete. The word "courier" also signifies a hired attendant who accompanies travelers abroad, and whose special duty consists in making arrangements for the journey, attending to passports, settling hotel bills, and the like. An important qualifica-

tion for a courier in the latter capacity is the ability to speak several foreign languages.

COUBIER DE MÉRÉ, kōōrya' de mā'ra', PAUL LOUIS (1772-1825). A French Liberal politician and classical scholar. He was born in Paris, Jan. 4, 1772, entered the army in 1792, and served without distinction until 1809, pursuing his studies as he found opportunity, and publishing unimportant critical articles and translations. He from his youth cherished a bitter aversion to the nobility and a passionate love of Greek literature. On resigning from the army he went to Florence and discovered there a complete manuscript of the Greek pastoral *Daphnis and Chloe* (see LONGUS), which he edited (1810) and translated into exquisite French. At the Restoration (1815) he became active as a political pamphleteer, writing letters for *Le Censeur*, comparable to *Les provinciales* of Pascal or the satires of Junius. Fined and imprisoned for his *Simple Discours* (1821) ridiculing a plan to endow the royal family, he published a report of his trial that had a sensational success throughout France. His last political satire, *Le pamphlet des pamphlets* (1824), is among the bitterest and best: witty, classical in form and scholarly allusion, epigrammatic in its common sense. A few months after, he was assassinated (April 10, 1825), by whom the government could or would never discover. His rare style has saved his writings from oblivion. Through communication with the classics he acquired a poetic grace, a vividness of description, and a Socratic irony which transformed vituperation into literature. Courier's *Œuvres complètes* were published in 4 vols., with an essay on his life by Armand Carrel (Paris, 1830; new ed., 1890). Consult: Gachet, *La jeunesse de Paul-Louis Courier, étude sur sa vie et ses œuvres de 1772 à 1812* (ib., 1911), and the same author's *Les pastorales de Longus, édition critique, suivie d'une étude sur l'essai de style recueilli de Courier* (ib., 1911); Schwab, *Vie politique de P.-L. Courier (Mercure de France, 1909)*; Sainte-Beuve, *Causeries du Lundi*, vol. vi (1857-72).

COURLAN, kōōrlan (Fr., probably from native South American). The French book name for a limpkin (*Aramidae*), called also "crying bird" and "mad widow" (*cuada loca*) by Spanish Americans. See LIMPKIN.

COURLAND, kōōrlānd, or **KURLAND** (trans. of Lett. *Kursemme*, from Kur, Finnish tribe inhabiting the region in mediæval times + *semme*, land, OCh. Slav. *zemlya*, OPruss. *same*, land, Gk. *χαμαί, chamai*, on the ground, Lat. *humus*, soil). One of the "Baltic provinces"; a government of European Russia, bounded by the Gulf of Riga and the Government of Livonia on the north, Vitebsk on the east, Kovno on the south, and the Baltic Sea on the west (Map: Russia, B 3). Area, 10,435 square miles. The surface is undulating, broken only by isolated hills, while the coasts are very low. There are a number of lakes, and a large portion of the area is covered with forests. The climate is damp, with very cold winters. The chief occupations are agriculture, cattle raising, and fishing. There are also a number of breweries, distilleries, and textile mills, but the manufacturing industries are very little developed. The commerce, on the other hand, is considerable. The seaport of Libau is the commercial centre. Courland had a population, Jan. 1, 1911, of 749,100. Letts form the bulk of the population, a few owning farms, but the majority working

as agricultural laborers. Large estates are scientifically conducted under German management, and produce cereals, flax, potatoes, etc. The majority of the population are Lutherans. Capital, Mitau.

Courland came under the rule of the Teutonic Order in the thirteenth century. In the second half of the sixteenth century it became an hereditary duchy under the sovereignty of Poland. After a long internal struggle between the Russian and the Polish parties the duchy came under Russian influence with the appointment of Biron as Duke of Courland in 1737. It was annexed to Russia in 1795. In 1905 it was the scene of a violent revolutionary uprising. See RUSSIA.

COURLAND, DUKE OF. See BIRON, ERNST JOHN.

COURNOT, kōōr'nō', ANTOINE AUGUSTIN (1801-77). A French mathematician, philosopher, and economist. His work in philosophy was important, anticipating in some particulars the doctrines of Bergson relating to the adjustment of rational processes to inanimate physical nature and their consequent inadequacy for the analysis of vital phenomena. But his fame rests chiefly upon his application of mathematical methods to the investigation of problems of economic theory. The chief results of Cournot's studies were the simplification of the theory of the equilibrium of demand and supply, the discovery of the theory of monopoly price now generally accepted in its essentials by economists, and a theory of the incidence of excise and customs taxes levied under conditions of monopoly and of competition which, as further elaborated by Marshall, Bastable, and Seligman, is generally accepted in public finance. Perhaps the most important service of Cournot to economic and social science was his demonstration of the applicability of the mathematical theory of probabilities to the problems of statistics. His most important works are: *Recherches sur les principes mathématiques de la théorie des richesses* (1838); *Exposition de la théorie des chances et des probabilités* (1843); *Traité de l'enchaînement des idées fondamentales dans les sciences et dans l'histoire* (1861); *Principes de la théorie des richesses* (1863; revised under the title *Revue sommaire des doctrines économiques* 1877); *Considérations sur la marche des idées et des événements dans les temps modernes* (1872).

COURSE OF TIME, THE. A religious epic in blank verse by Robert Pollok (1827).

COURSEER (Fr., *coursier*, from OF., Fr. *course*, Lat. *cursor*, *course*, from *currere*, to run). The French name of 8 or 10 species of plovers of various genera inhabiting desert regions of Africa and Asia. The best known is the cream-colored courser (*Cursorius gallicus*), common on arid plains from the western Sahara to northern India. All are sand-colored above, swift-footed, and wary, and conceal themselves by simply squatting and remaining motionless and so practically invisible; their food consists of insects, mainly locusts. The name "black-backed courser" is frequently given to the crocodile bird (q.v.).

COURSING (from *course*, OF., Fr. *course*). The pursuit of a hare by greyhounds, who follow it by sight and not by scent, is one of the most ancient of field sports. Arrian (150 A.D.) made its history the subject of much research. There are two kinds of coursing—"open," which

may be described as the haphazard pursuit of any hare that can be discovered, without regard to any set rules or regulations; and "close" coursing, in which the course is determined by fixed boundaries, or otherwise fenced in. In the latter case the hares, which have been previously secured, are released, and after sufficient law (time or distance) has been allowed them, the dogs are slipped, and the pursuit begins. Both these kinds of coursing are practiced under similar rules in Great Britain and America. The oldest coursing club in England was that established at Swaffham in Norfolk in 1776, and of existing organizations the most important is the Altcar Club, established in 1825. In America the sport has been in existence since the middle of the nineteenth century, but open meetings, in which competitors from regular organizations take part, are of comparatively recent date. The supervising and controlling body of the sport is "The American Coursing Board," and the principal meets, or meetings, are in the two Dakotas, Kansas, Nebraska, Iowa, and Minnesota. The open coursing of the coyote (prairie wolf) is frequently practiced (especially by stockmen and cowboys) in this country and is an exciting and somewhat dangerous sport, often involving a long chase on horseback over a rough country.

In England the sport is conducted under the laws and rules of the National Coursing Club, and the principal meet is that held every February over the Altcar Course near Liverpool, for the Waterloo cup, a prize instituted in 1836. It was originally an 8-dog course, increased the next year to 16, the year after to 32, at which it stood until 1857, when it became a 64-dog stake, and as such it remains. The best dogs of the world compete. In competitions the judge follows the dogs throughout the course, noting every movement from the moment they are slipped until the "kill," or conclusion of the course—his decision being based on the following general rules: I. For *speed*, according to the degree of superiority shown, 1, 2, or 3. II. For the *go-by*—the starting of a greyhound a clear length behind its opponent, passing it in a straight run and obtaining a clear length ahead—2 points or, if gained on the outer circle, 3 points. III. The *turn*—a sharp turn of not less than a right angle in the hare's course when pressed by a dog, 1 point. IV. The *wrench*—a change of less than a right angle in a hare's course when pressed, one-half point. V. The *kill*, 2 points, or in a descending scale in proportion to the merit displayed, which may be of no value. VI. The *trip*—an unsuccessful effort which threw the hare off its legs, or the getting so close as to snatch it and lose hold, 1 point. Consult *The Encyclopedia of Sports and Games*, ed. by the Earl of Suffolk (London, 1911).

COURT (Fr. *cour*, It. *corte*, from Lat. *cohors*, inclosure, from *co*, together + *hōrs*, connected with Lat. *hortus*, garden, Gk. *χῆρος*, *choros*, hay, OIr. *gort*, sedge, Goth. *garis*, court, OHG. *garto*, Ger. *Garten*, AS. *geard*, Eng. *yard*). Courts, in the legal sense—i.e., authorities empowered to try and punish persons charged with offenses against the public or state, and to settle disputes regarding the rights and duties of individuals—have existed among all peoples that have emerged from savagery. There is no single root from which early judicial authority springs; nor is there, even among the Aryan peoples,

any single typical form of primitive court. The right of the community to punish offenses against the community—a right which expresses itself originally in lynch law—may beget a popular jurisdiction in criminal cases; and the interest of the community in preventing feuds may make the popular assembly competent to decide civil cases. The belief that flagrant breaches of the social order are offenses against the gods may vest criminal jurisdiction in the priests, and the duty of the priests to see that vows and promises under oath are performed may be expanded into a fairly broad civil jurisdiction. The attribution to the king of disciplinary powers over the popular army, and the concentration in his hands of the power of preserving internal peace, may create an extensive royal jurisdiction over crimes and also over torts; and the king's civil jurisdiction may be widened by ascribing to him a patriarchal authority analogous to that exercised by the heads of houses and of clans. Private disputes may be referred, voluntarily at first, to the decision of king or priest or assembly, and when such references have become customary the duty of decision may be transformed into judicial authority. Traces of all these ideas and influences are discernible in the early judicial systems of the Aryan peoples.

Roman Courts. Among the ancient Romans criminal jurisdiction was exercised by the King or by officials appointed by the King. From the decisions of such officials appeal to the popular assembly was sometimes granted. In the Republican period such an appeal (*provocatio*) lay against all sentences condemning a citizen to death, or scourging, or exile, and also against fines beyond a certain amount; and this appeal became the real trial. The forms observed were substantially the same as in legislation. A proposal to condemn the accused to a certain punishment was submitted to the people, debated before them in informal assembly (*contio*), and accepted or rejected by them in formal assembly (*comitia*). (See COMITIA.) During the last century of the Republic criminal courts of a different type, the *questiones*, gradually absorbed the jurisdiction previously exercised by the assembly. The *questio* was a body of select jurors sitting under the presidency of a special magistrate, usually a prætor. The jurors were drawn from a small panel, which included only the most distinguished and wealthy citizens.

Civil jurisdiction, also, is said to have been exercised by the Roman kings. It is probable, however, that the King did not decide the controversies submitted to him; but, like the prætor in later times, heard the pleadings only and then sent the parties to a *judez*, or referee, nominated (or at least accepted) by the parties themselves. It also seems probable that, in the royal period, the referees were usually priests (*pontifices*). In the Republican period there were elected boards of *judices* (*decemviri, centumviri*), to which cases were sent by the prætor; but reference to a single *judez*, regularly a senator, seems to have been customary in actions on tort or on contract, and was admissible, during the last century of the Republic, in all cases.

The fundamental principle which controlled the administration of civil and criminal justice, and the composition of the courts, in the Republican period, was the separation of jurisdiction (*jus*) and judgment (*judicium*). Pleas were

made and the case was formulated before a magistrate, but the decision was rendered by a private citizen or by a body of private citizens. In the Imperial period this system (*ordo judiciorum*) was gradually supplanted by the *cognitio extraordinaria*, in which an Imperial official conducted the trial and rendered the decision. Under this system the administration of justice was taken out of the hands of the people and became a part of the general administration created and controlled by the Emperor. As in the general administration, so in the administration of justice, there were courts of lower and higher instance, and appeals could be taken from the former to the latter.

Teutonic and Mediæval Courts. The primitive Teutonic court was a folkmoet, or popular court, in which the decision was proposed by the presiding dignitary (king or prince or hundredman), or by a law speaker appointed by the presiding dignitary, and was approved or disapproved by the assembled freemen. In the later Frankish (Carolingian) Empire, special judgment finders (*scabini, Schoffen, échevins*) gradually took the place of the body of freemen. These judges or assessors were at first appointed by the count; but, after the dissolution of the Empire, their office, like most offices, became hereditary.

The early Teutonic courts were those of the hundred, of the county, and of the tribe. In the Frankish Empire the court of the tribe was replaced by the royal court, held by the count palatine; and in the Carolingian period circuit courts were held by Imperial missi. Even in the Carolingian period the courts of the hundred and of the county were being supplanted by manorial courts, held by the bailiffs of the seigneurs, and after the dissolution of the Empire the popular free courts disappeared in many parts of Europe. During the Middle Ages appeared special feudal courts and independent city courts. Nearly all the mediæval courts were courts at once of first and last instance; there was no system of appeals, the King's court was usually nothing but a feudal court for the great vassals. In all of these courts, from the King's court down to the manorial court, the decision was usually rendered (or at least approved) by a limited number of judges or assessors, who were regularly the *pares* of the defendant—i.e., persons of the same class and rank. Throughout the Middle Ages there were also special ecclesiastical courts (see CANON LAW), with jurisdiction not only over church matters, but over the persons of the clergy and over many matters to-day regarded as civil. In these courts the judicial organization and procedure of the late Roman Empire were perpetuated. From the ordinary (bishop's) courts appeals ran to Rome, and the Pope could appoint legates to hold special courts.

Modern European Courts. When the administration of justice was reorganized by the absolute monarchy, the new royal courts were modeled on the ecclesiastical courts of the Middle Ages. Professional or "learned" judges replaced the mediæval lay judges; the judge or bench of judges rendered decision both upon the law and the facts; appeals ran from the courts of lower instance to those of higher, and finally to the King's court. The modern European courts are still, essentially, courts of this Roman-Imperial ecclesiastical type, except that the court of last instance has usually cassational jurisdiction

only, not reformatory jurisdiction. The only important modification which has been introduced is jury trial in criminal cases. Lay assessors have been retained or reintroduced, in some countries, in the police courts and in the commercial courts. These latter courts, with special jurisdiction over merchants and commercial cases, are survivals of the independent city courts of the Middle Ages. The number of judges in a European court is usually proportional to the amount of business with which the court has to deal. In the larger courts the judicial force is divided into sections (sometimes termed "senates"), and the judicial business is distributed according to its character—criminal cases going to one section, commercial cases to another, etc. When a doubtful question of general importance comes before such a section, a session of the entire court may be called. In all the leading European states the independence of the judge is safeguarded by life tenure and fixed salary, and in the German Empire by the rule that a transfer, even when it is technically a promotion, cannot be made without the consent of the judge concerned.

English and American Courts. Originally of wider signification, the term "court" has come to represent a permanent organization or tribunal for the public administration of justice, composed of one or more judges, who, when engaged in the transaction of business, are attended ordinarily by attorneys and counselors, who represent the litigants; by clerks, who keep records of what is done, and by marshals, sheriffs, constables, or like officers, who enforce judicial mandates and preserve order.

In primitive communities courts perform legislative and executive as well as judicial functions. The *scyresgemot*, county court, or sheriff's turn of Anglo-Saxon England was not simply a judicial tribunal presided over by a bishop and sheriff, but was an assemblage of freemen for the discussion and transaction of local affairs generally. The *Aula Regis*, or Great Council of the Kingdom, in early English history performed legislative as well as judicial duties; and so did the stated assemblages of the ruling class in some of the English colonies in this country. In Massachusetts the present names of the legislative and the judicial bodies—the General Court and the Supreme Judicial Court respectively—bear testimony to the fact that the primitive court of the colony performed both legislative and judicial functions.

I. English courts may be classified in various ways. One basis of classification is their relative authority; and this divides them into superior and inferior courts. (a) The latter class includes those tribunals over which courts of the former class may exercise a supervisory jurisdiction by writs of mandamus (q.v.), certiorari (q.v.), or prohibition. They are of four kinds:

1. Local courts of criminal or quasi-criminal jurisdiction, such as *borough sessions*, held by a recorder or the justices of a municipal borough; *licensing sessions*, held by borough justices for granting or withdrawing liquor licenses; *petty sessions* and *special sessions*, or courts held by two justices or a borough police magistrate in the exercise of a summary jurisdiction over minor offenses; *general or quarter sessions* of the borough and of the county, for the trial of felonies and misdemeanors within the borough or county jurisdiction, and for appeals from petty and special sessions.

2. *Local civil courts of record*, such as borough civil courts and county courts. The latter are lineal descendants of the *scyresgemots* of King Alfred; but their present constitution, jurisdiction, and practice are regulated by the County Courts Act, 1888 (51 and 52 Vict. c. 43). Under this statute, England, with the exception of London, is divided into 491 county-court districts, each court having a judge who must be a barrister of at least seven years' standing, and who is appointed by the Lord Chancellor, is allowed traveling expenses (except the judge within the Duchy of Lancaster, who is paid by salary), is addressed as "His Honor Judge —," and ranks next after knights bachelors. Some of these judges have a high professional reputation. From the decisions of these courts an appeal lies in many cases to the High Court, and the latter possesses the power of supervising the proceedings of the former by writs of certiorari and prohibition, and by orders to show cause, which have been substituted for the old writ of mandamus.

3. The *university courts* of Oxford and Cambridge, which exercise civil jurisdiction in some cases in which members of the university are concerned.

4. *Manorial courts*, having a limited jurisdiction in some parts of the kingdom. See MANOR; COURT BARON.

(b) The *superior courts* of England, prior to the Judicature Act of 1873, embraced those of Common Law and of Equity, the Probate and Divorce Court, the Admiralty Court, and the London Court of Bankruptcy. The superior courts of common law and of equity were evolved from the *Aula Regis*, or Great Council of the Kingdom. It was provided by Magna Charta that "common pleas shall not follow one court, but shall be holden in some certain place." Accordingly new justices were appointed, and the *Court of Common Pleas* was established at Westminster Hall, with jurisdiction over all civil actions between individual litigants, i.e., over all common pleas or suits, as distinguished from pleas of the crown or criminal actions. A century later Edward I detached from the *Aula Regis* the *Court of King's Bench*, the *Court of Exchequer*, and the *Court of Chancery*, thus settling the superior courts of law and equity upon the basis which they occupied until recently.

Originally the *King's Bench* (or *Queen's Bench* during the reign of a queen) was a criminal court and the conservator of the public peace. By a series of fictions, however, its jurisdiction was extended to civil actions.

So the *Exchequer*, which at first was a court of revenue only, extended its jurisdiction by a series of legal fictions to a variety of suits between individual litigants.

Under Edward I the *Court of Chancery* (q.v.) became an established judicial tribunal. It was presided over by the Chancellor, who had the custody of the Great Seal, and with it the power to issue writs returnable in chancery, and thus to act as a check upon the common-law courts. Later the Lord Chancellor was assisted in the performance of his judicial functions by the Master of the Rolls and by vice chancellors. For the influence of this court upon the development of English law, see CHANCERY; EQUITY.

(c) Reference has been made already to the fact that one of the presiding officers of the Anglo-Saxon local courts was a bishop. After

the Norman Conquest the bishops ceased to take part in those assemblies and were accorded exclusive cognizance of spiritual matters. This jurisdiction was steadily extended until it embraced not simply the discipline of the clergy and the regulation of ecclesiastical affairs, but also the control of marriage and divorce, and the disposition of the estates of deceased persons. At present, however, *ecclesiastical courts* in England are confined to the decision of ecclesiastical questions, while divorce and matrimonial causes, as well as the probate (q.v.) of wills and testaments, and the administration of decedents' estates, are within the jurisdiction of secular courts.

(d) The *Court of Admiralty* is one of great antiquity, having its origin, undoubtedly, in the period when the King was in truth the source of all judicial power. After the courts of common law, described above, acquired a degree of independence of the sovereign, they did not hesitate to issue writs of prohibition to the Court of Admiralty and to treat it as an inferior tribunal. Its present jurisdiction is mainly statutory.

The *London Court of Bankruptcy* was created and regulated by modern bankruptcy (q.v.) statutes.

(e) By a series of judicature acts, beginning with that of 1873, all of the foregoing secular courts were consolidated into one *Supreme Court*. This consists, at present, of two permanent divisions, one of which, styled *His Majesty's High Court of Justice*, has original jurisdiction of all actions formerly brought in either of the superior courts of common law or of equity, or in the admiralty, or probate, or divorce, or bankruptcy courts, and an appellate jurisdiction over various cases brought up from inferior courts. The other division is styled *His Majesty's Court of Appeal*, its jurisdiction being almost exclusively appellate. The High Court is separated into three parts, known respectively as the *Chancery Division*, with the Lord Chancellor as president and five judges; the *King's Bench Division*, with the Lord Chief Justice as president and 14 judges; and the *Probate, Divorce, and Admiralty Division*, with a president and a judge; the general character of the subjects of which each division has cognizance being indicated by its name.

The Court of Appeal consists of the Lord Chancellor, every living person who has held the office of Lord Chancellor, the Lord Chief Justice, the Master of the Rolls, the president of the Probate, Divorce, and Admiralty Division, and five judges, with the title of Lords Justices of Appeal. It is an august tribunal, whose decisions of appeals from the various branches of the High Court command great respect.

In addition to this permanent and impressive Appellate Division of the Supreme Court, there are divisional courts, in the King's Bench Division and in the Probate, Divorce, and Admiralty Division, composed of two judges, ordinarily, for the disposition of appeals from the petty or quarter sessions, from the county court, and from divers other inferior tribunals.

(f) Above the Supreme Court, as a final court of appeal, is the *House of Lords*, whose appellate jurisdiction dates back to the thirteenth century. At present, however, only a few of its members take any part in the performance of its judicial functions. They are known as *Lords of Appeal*. The Lord Chancellor presides over

them. (See *LOREDS, HOUSE OF*.) The final court of appeal for cases arising in India and the colonies is the Privy Council (q.v.), which has also final appellate jurisdiction over judgments of the ecclesiastical courts and of the Naval Prize Court.

From the foregoing sketch of the English courts it is apparent that a litigated case may be passed upon by four successive tribunals. It may be instituted, e.g., in a county court, thence appealed to a divisional court, thence to the Court of Appeals, and finally to the House of Lords. A similar series of appeals may terminate in the Privy Council.

II. In the United States distinct systems of courts exist—one organized under the Federal Constitution and statutes, the others under the constitutions and statutes of the several States.

1. **Federal Courts.** (a) Sec. 1 of Art. III of the Federal Constitution declares that "the judicial power of the United States shall be vested in one Supreme Court, and in such inferior courts as Congress may from time to time establish." By the second section of the same article, as modified by the Eleventh Amendment to the Constitution, the judicial power of these courts is extended to all cases in law and equity arising under the Federal Constitution, laws, and treaties, to all cases affecting foreign ambassadors, ministers, or consuls, to all admiralty and maritime cases; to controversies to which the United States shall be a party; to controversies between two or more States, between citizens of different States, between citizens of the same State claiming lands under grants of different States, between a State or the citizens thereof and foreign States, citizens, or subjects; and to suits by a State against a citizen of another State.

(b) Under the power conferred upon it to establish judicial tribunals inferior to the Supreme Court, Congress has established a Court of Claims, district courts, and circuit courts, the latter having formerly an extensive original jurisdiction, but now, by a recent Act of Congress (Judicial Code, 1911), only an appellate jurisdiction. Besides these it has provided for various courts in the Territories. The latter are not, however, United States courts under Article III of the Constitution, but are rather congressional courts. They are called into being as an incident to the congressional authority to make all needful rules and regulations respecting the territory of the United States. Their judges are not entitled to hold office during good behavior, but may be appointed for a term of years, and may be subject to suspension or removal from office by the President.

(c) The *Court of Claims* was established in 1855 to hear and determine certain classes of claims against the United States, thus permitting citizens in many cases to sue the government. See *CLAIMS, COURT OF*.

(d) The *Commerce Court*, instituted by Act of Congress for the enforcement of orders and decrees of the Interstate Commerce Commission (q.v.), with power to set aside, modify, or annul such orders, consisted of five circuit judges of the United States. After a brief existence it was abolished by Act of Congress, 1914.

(e) By the Act of 1789 the States were divided into 13 districts, which have increased to 76 (1906), each district usually having a judge, a clerk, a marshal, and an attorney appointed by the Federal government. The dis-

trict courts have an extensive jurisdiction, embracing jurisdiction over admiralty (q.v.) and maritime causes; suits arising under the revenue laws, the civil-rights statutes, and various other legislation; prosecutions for crimes against the United States or for the recovery of penalties under Federal laws; proceedings in bankruptcy, and many other subjects of litigation. See DISTRICT COURT.

(f) By an Act of Congress passed in 1911 (the Judiciary Code), the appellate jurisdiction formerly exercised by circuit courts was transferred to the circuit courts of appeal, of which there are nine—one in each circuit. Each of these courts consists of three judges, any two of whom constitute a quorum. Its members are selected from the following list: the Supreme Court justice assigned to the circuit in question, the circuit judges and the district judges of that circuit; but no justice or judge is allowed to sit in this tribunal in a case which was tried before him while holding a circuit or district court. It is apparent, therefore, that the *personnel* of these courts changes frequently.

(g) The final appellate tribunal of the Federal judiciary is the *Supreme Court*, which is unique and probably the most influential judicial body in the world. See SUPREME COURT OF THE UNITED STATES.

2. The *State courts* are modeled after those of England. It is true they do not include admiralty nor ecclesiastical tribunals; but this is because admiralty and maritime jurisdiction is confined exclusively to the Federal courts by the Federal Constitution, and because there is no state church in any of the various States. That part of the powers of the English ecclesiastical courts relating to the estates of deceased persons and kindred subjects has been devolved in many States upon tribunals bearing various names, such as surrogates', probate, or orphans' courts. Most of the local or inferior courts, however, as well as the superior courts of law and of equity, were copied by State constitutions and statutes from English originals. In many of the States courts of chancery (q.v.) and of common law (q.v.) have been united into a single supreme court. It is impossible in this article to describe the judiciary system of each of the States, for in matters of detail they differ not a little, but a brief sketch of the New York courts will give the reader an idea of those existing in other States.

(a) To some extent these courts correspond to the territorial subdivisions of the State. For example, each town (q.v.)—the territorial unit in New York—is required to elect *justices of the peace* (q.v.), who are empowered to hold courts and to exercise a limited criminal as well as civil jurisdiction. In each county a *county court* is provided for, and also a *surrogate's court*, although in some counties these courts are held by the same judge. Other local courts, with a limited jurisdiction, have been erected by the Legislature, especially in cities and large villages. The *Supreme Court* possesses a general jurisdiction in law and equity throughout the State. It is composed (1914) of 100 justices, each of which is empowered to hold court in any county, although they are not elected by the State at large, but each is chosen by the electors in one of the nine judicial districts into which the State is divided. Some of these justices hold courts for the trial of cases or the determination of motions; while

others, upon the selection of the Governor, constitute four courts of appeal, called *appellate divisions*, the State being divided into four departments, in each of which one of these courts has appellate jurisdiction. From determination by an appellate division an appeal may be taken in many cases (see Art. VI, § 9, of New York Constitution) to the *Court of Appeals*, the highest regular judicial tribunal of the State, from whose decision there is no appeal. It consists of a chief judge and six associate judges. A *Court of Impeachments* is also provided for by the State constitution. This, however, is not a regular, but an extraordinary, tribunal, which rarely assembles.

(b) In some States the Supreme Court possesses original jurisdiction and is also the final court of appeals. That is the case in Massachusetts, where an action brought in the Supreme Court may be tried and decided by a single justice, and from his decision an appeal may be taken to the full court. In that State the Supreme Court is the final tribunal for appeals from the decisions of a single justice; also from the Probate Court, the Insolvency Court, and the Superior Court—the Superior Court, in turn, possessing both original and appellate jurisdiction, appeals running to it from municipal, district, police, and justice courts.

Consult: *Encyclopadia of the Laws of England* (London, 1897), Curtis, *Jurisdiction of the United States Courts* (2d ed., Boston, 1896), Foster, *Treatise on Federal Practice* (Chicago, 1901); Cummings and Gilbert, *Official Court Rules of New York* (New York, 1900). The United States Constitution and Revised Statutes; the constitutions and statutes of the several States. For a separate treatment of special courts, see individual titles such as COMMON PLEAS, COURT OF, SURROGATE; COURTS, MILITARY. PROBATE COURT; ARCHES, COURT OF, SUPREME COURT OF THE UNITED STATES, ETC. Consult also the authorities referred to under such titles as CIVIL LAW; ADMIRALTY LAW; PLEADING; ETC.

COURT. 1. A name originally applied to the square or space inclosed by the buildings of a feudal castle. In time it came to denote the persons immediately surrounding a feudal chief or superior. Its application is now confined to the residence and surroundings of sovereign princes, together with such persons of distinction as are in the habit of approaching the monarch and of associating with the other members of the royal family, both in a public and a private capacity. In this sense its use is sometimes extended to the government of which the sovereign is the titular head, as when an ambassador is said to be appointed to (or "near") the court of St. James, i.e., of Great Britain.

2. In architecture, an open space around which a building is constructed. The term is commonly used even where the space is not entirely surrounded, as in many modern public and commercial buildings which inclose three sides of a reserved space left open on the fourth. An inclosed space is still called a "court" when roofed with glass, but not when covered with an opaque roof or vault: it is then called a "hall."

In ancient times, before the invention of glazed windows, light and air for dwellings, as for temples, was obtained through unprotected openings. For greater safety and privacy such

windows, as well as the doors to the various rooms, were made to open upon a common area, walled in from the street or public land. In order to economize footsteps as well as space, it early became the custom to build the house entirely around one or more such courts, as in Babylonian and Assyrian palaces, and the great Minoan palace group at Cnossos (q.v.) in Crete. This arrangement of the house plan has persisted in various forms to the present day in the subtropical and warmer temperate climes. It is seen in a highly developed form in Pompeiian houses, in which different types of court were called "atrium," "cavædium," "peristyle," etc. Except in the closer-built quarters of the cities, the houses in Spain and Spanish-American cities are still commonly built around a court called a *patio*. In France, also, the larger city houses are built at the back of a court, of which the other three sides are occupied by the dependencies, the entrance from the street being through an imposing doorway and passage called the *porte-cochère*, or carriage door.

All the great palaces of Europe erected since the fifteenth century are built around courtyards (this term is synonymous with "court"). In this they follow the precedents set by the later feudal fortresses and castles, as at Chambord and Saint-Germain in France, the Louvre, Heidelberg Castle, and many others, sometimes following the very outline of the mediæval bailey. The Alhambra and several other Moorish buildings in Spain preserve for us the rich decoration of the Moslem courtyards of the twelfth to the fifteenth centuries. In Italy the Renaissance architects developed several types of court architecture, and made of the courts of their palaces structures of extraordinary beauty and dignity. Three main types are recognizable: the Florentine, in which the upper walls of the court are borne on an arcade of arches carried by columns; the Lombard, in which the court arcade is in two superposed stories; and the Roman, in which the arcade in one or more stories does not carry the court walls, and is designed after the Roman fashion, with arches borne on piers fronted by columns or pilasters. The Riccardi and Strozzi palaces and the Palazzo Vecchio at Florence illustrate the first; the Bevilacqua Palace at Bologna and the Brera at Milan, the second; the Farnese Palace at Rome, the third of these types. Incomparably the finest of French courtyards is that of the Louvre at Paris. Perhaps the most famous of European courts is the lesser Belvedere Court of the Vatican at Rome, which has given its name to two celebrated sculptures exposed in or near it—the Apollo and the Hercules torso; next to it in artistic fame is the court of San Damaso, with its beautiful arcades called the Loggie, decorated by Raphael and his successors. In England and the United States and other northern countries the court is usually less an architectural than a utilitarian feature to provide light and air, and as such its minimum dimensions are prescribed by the laws of many cities in the case of dwellings and tenements. The Public Library of Boston is a fine example among the few modern public buildings in the United States which are built around an architecturally imposing court.

Closely related to the courts of houses and palaces are the cloisters (q.v.) or cloister

garths of monasteries and cathedral chapters; the forecourts or atria of ancient basilicas, surrounded by arcades, as at San Ambrogio, Milan (see ATRIUM); the courts of ablution of Mohammedan mosques (see MOSQUE); and the great pillared courts of Egyptian temples. See HOUSE; PALACE.

COURT, CONTEMPT OF. See CONTEMPT.

COURT, PRESENTATION AT. What in monarchical countries is considered the honor of being presented at court or formally introduced to the sovereign, is valued not only for the éclat of the ceremonial, but also for its service as a credential. Having been received by his *own* sovereign, a person may expect to be received anywhere else, and may claim to be presented by the representative of his country at any foreign court. The privilege is therefore carefully guarded from abuse. Thus Queen Victoria, during her long reign, exercised the most scrupulous personal supervision over the names of those who sought the honor, excluding all whose reputation was in the least tarnished. In England the names of those desiring to be presented and of their presenters must be sent to the Lord Chamberlain's office several days previously for approbation. Those who are not British subjects may be presented by their own Ambassador. An elaborate ceremonial, including the wearing of full court dress, is connected with the ceremony. For fuller information as to court dress, etc., consult *Armytage, Old Customs and Modern Court Rules* (London, 1883); *Trendell, Dress Worn at His Majesty's Court, Issued with the Authority of the Lord Chamberlain* (ib., 1908), *Hodgetts, The House of Hohenzollern: Two Centuries of Berlin Court Life* (ib., 1911).

COURT, TERM OF. See TERM OF COURT.

COURT, KÖÖR, ANTOINE (1696-1760). A French Reformer, called the "Restorer of Protestantism in France." He was born at Villeneuve de Berg, in Languedoc, March 27, 1696. His parents were peasants, adherents of the Reformed church, which was then undergoing cruel persecution. When but 17 years old, Court began to speak at the secret meetings of the Protestants, held literally "in dens and caves of the earth," and often in darkness, with no pastor present to teach or counsel. He entertained a great desire to build up the church so ruthlessly persecuted, and to this end he proposed four things: (1) regular religious meetings for teaching and worship; (2) suppression of the fanaticism of those who professed to be inspired, and of the consequent disorders; (3) restoration of discipline by the establishment of consistories, conferences, and synods; (4) the careful training of a body of pastors. To the performance of this great task he devoted his life. From audiences of half a dozen meeting in secret, he came to address openly 10,000 at one time. In 1715 he convoked the first Synod of the Desert. In 1724 further fury was hurled at the Protestants in a decree which assumed that there were no Protestants in France and prohibited the most secret exercise of the Reformed religion. A price was set on Court's head, and in 1730 he fled to Lausanne. There, after great exertion, he founded a college for the education of the clergy, of which, during the remaining 30 years of his life, he was the chief director. This college sent forth all the pastors of the Reformed church of France until the close of the

eighteenth century. He died at Lausanne, June 13, 1760. Court intended to write a history of Protestantism and made extensive collections for the purpose, but he did not live to do the work. He wrote, however, *An Historical Memorial of the Most Remarkable Proceedings Against the Protestants in France from 1744-51* (Eng. trans., London, 1732); *Histoire des troubles des Cévennes ou de la guerre des Camisards* (1760; new ed., 3 vols., Alais, 1819). Consult his *Autobiography*, ed. by E. Hugues (Toulouse, 1885); his *Letters*, from 1739, ed. by C. Dardier (Paris, 1885, 1891); E. Hugues, *Antoine Court* (ib., 1872): id., *Les synodes du désert* (3 vols., ib., 1885-86); H. M. Baird, *The Huguenots and the Revocation of the Edict of Nantes* (New York, 1895); *Bulletin de la Société de l'Histoire du protestantisme français* (Paris, 1893-1906)—His only son, ANTOINE COURT DE GÉBELIN (born at Nîmes Jan. 25, 1725, died in Paris May 10, 1784), who took the name of his grandmother, was a literary man of recognized rank, and rendered excellent service, first as his father's amanuensis and assistant and afterward as a scholar at the capital. He is remembered in connection with the famous case of Jean Calas (q.v.) by his work *Les Toulousaines, ou lettres historiques et apologetiques en faveur de la religion réformée* (Lausanne, 1763).

COURT BARON (Lat. *Curia Baronis*). In mediæval England, the local court of a manor. Such courts were incident to every manor, barony, or lordship of land, in the Norman and Angevin period of English history, and in subsequent ages came to be regarded as the characteristic and essential quality of a manor, inasmuch that Coke declares that "a court baron is the chief prop and pillar of a manor, which no sooner faileth, but the manor falleth to the ground." Being of customary origin, and custom being a matter of immemorial usage, no new courts baron, and consequently no new manors, can be created, and it is asserted by Blackstone that all manors existing in his time "must have existed as early as King Edward the First." However this may be, the manorial courts of which we have any knowledge are of great antiquity, though those that remain have by successive acts of Parliament and social changes been reduced to mere shadows of their former authority and importance, most of them having to-day only a nominal existence.

The court baron was and is the court of the freeholders of the manor. The lord, or his steward, is the presiding officer of the court, which is composed of those freehold tenants of the manor who owe, as one of the services or incidents of their tenure, the service of "suit," or attendance, at the court. While the judicial functions of the court varied considerably, according to the customs of the manor, in general it exercised an ordinary jurisdiction in civil suits among the tenants of the manor, determined proprietary rights of land, regulated rights of common, sanctioned grants of the waste, etc. Until the reform of legal procedure in England in 1833, the great proprietary action for the recovery of land, known as the "writ of right," was properly instituted in the court baron, though the great authority of the regular tribunals of the kingdom had long since brought safer and more convenient processes within the reach of persons asserting claims to land. Many of the manorial courts have died

out from the lack of a competent number of "suitors," i.e., freemen subject to attendance at court.

A species of court baron existed in the manors created by royal patent in the Province of New York in the seventeenth and eighteenth centuries. These were modeled after the historic courts baron of the mother country and for a time enjoyed considerable authority. They were abolished with the manors to which they were incident in the revolutionary legislation of 1787. Consult: Bolton, *History of the Several Towns, Manors, and Patents of the County of Westchester, New York*; Digby, *History of the Law of Real Property* (5th ed., Oxford, 1898); Pollock and Maitland, *History of English Law* (2d ed., London, 1899); Maitland, *Select Pleas in Manorial Courts* (Selden Society, 1889); Introduction: Gurdon, *History . . . of Court Baron and Court Leet* (ib., 1731). See COURT LEET, CUSTOMARY LAW; MANOR.

COURT BEGGAR, THE. A play by Richard Brome (1632).

COURT CEREMONIAL. See CEREMONIAL COURT.

COURTEILLE, ABEL PAVET DE. See PAVET DE COURTEILLE.

COURTENAY, kŕt'ná, EDWARD HENRY (1803-53). An American mathematician, born in Maryland. He graduated in 1821 at the United States Military Academy, where until 1824 he was an assistant professor. In 1829-34 he was professor of natural and experimental philosophy there, in 1834-36 professor of mathematics at the University of Pennsylvania, and in 1842-53 professor of mathematics at the University of Virginia. He was an engineer in the construction, in 1837-41, of Fort Independence in Boston harbor, and in 1841-42 was chief engineer of the dry-dock work in the Brooklyn Navy Yard. He translated and edited the *Elementary Treatise on Mechanics* of Boucharlat (1833), and prepared a *Treatise on the Differential and Integral Calculus*, and on the *Calculus of Variations* (1855).

COURTESY TITLES. See TITLES OF HONOR.

COURT FOOL. From very ancient times there existed a class of persons whose business it was to while away the time of the noble and the wealthy, particularly at table, by jests and witty sayings. The custom is so old that it is mentioned in the great Sanskrit epic *Ramáyana* (q.v.). Plutarch speaks of a jester owned by the King of Persia. Philip of Macedon, Attila, Harun al-Rashid, and even Montezuma employed them. Only in the Middle Ages, however, did the office of court fool become a regular and indispensable function. At the end of the fourteenth century the fashion developed rapidly. Queens, dauphins, dukes, and wealthy barons all maintained their fools. The symbols of such a personage were: the shaven head, the fool's cap of gay colors with ass's ears and cock's comb; the fool's sceptre, which was variously formed; the bells, which were mostly attached to the cap, but in some cases to other parts of the dress; and a large collar. The rest of the costume was regulated by the taste of the master. Of these professional fools, some obtained an historical reputation, as Triboulet, jester of King Francis I of France, and his successor, Brusquet; Klaus Narr, at the court of the Elector Frederick the Wise of Prussia; and Scogan, court fool to Edward IV of England. The kings and regents of Scotland had

their jesters; and the sarcastic sayings of some of these privileged personages—such as those of Patric Bonny, jester to the Regent Morton—are still remembered. English court jesters died out with the Stuarts, one of the last of the race being the famous Archie Armstrong (died 1672). Besides the regular fools recognized and dressed as such, there was a higher class, called "merry counselors," generally men of talent, who availed themselves of the privilege of free speech to ridicule the follies and vices of their contemporaries. Of these, Kunz von der Rosen, jester to the Emperor Maximilian I; John Heywood, a prolific dramatic poet and epigrammatist at the court of Henry VII; and Angeli, a French courtier, were particularly distinguished for talent and wit. In all times there have existed at courts persons who, without becoming jesters by profession, were allowed the privilege of castigating the company by their witty and satirical attacks, or who served as an object for the wit of others. Among these were the Saxon general Kyaw, celebrated for his blunt jests, and the learned Jacob Paul, Baron Gundling, whom Frederick William I of Prussia, to show his contempt for science and the artificial court system, loaded with titles. Often imbecile or weak-minded persons were kept for the entertainment of the company. The custom survived long in Russia, where Peter the Great had so many fools that he divided them into distinct classes, and kept them with him wherever he went. As late as the nineteenth century the Czar of Russia kept a jester at court, and in France just before the Revolution Marie Antoinette had her fool. Consult: Nick, *Die Hof und Volksnarren* (Stuttgart, 1861); Flögel, *Geschichte der komischen Litteratur* (Leipzig, 1784); Doran, *History of Court Fools* (London, 1858).

COURTHOPE, WILLIAM JOHN (1842–). An English scholar and author, educated at Harrow and at New College, Oxford, where his career was most distinguished. He was professor of poetry at Oxford (1895–1901) and was appointed honorary fellow of New College in 1896. He gave promise of distinction in the kind of poetry exemplified in his *Ludibria Lunæ* (1869) and *The Paradise of Birds* (1870), but scholarship and criticism of a distinctively academic stripe came to occupy him almost exclusively. Among his more important works are: *Addison* ("English Men of Letters Series," New York and London, 1882); *The Liberal Movement in English Literature* (1885); *Life in Poetry* (London, 1901); *History of English Poetry* (6 vols., ib., 1895–1909). He was made C.B. in 1892, and received the degrees of D. Litt. and LL.D. respectively from Durham (1895) and Edinburgh University (1898). He also edited, with biography, the last five volumes of the standard edition of Pope (10 vols., 1871–89), which was begun with Whitwell as editor.

COURT LEET (from *court* + *leet*, AS. *læode*, OHG. *lînt*, Ger. *Leute*, people; connected with OCH. Slav. *Gudŭ*, Lett. *laudis*, people, and ultimately with Skt. *ruh*, to grow). In English law, a local customary court of great antiquity and of a popular character, having a limited criminal jurisdiction. It has been declared to be "the most ancient court in the land for criminal matters, the court baron being of no less antiquity in civil," and it is supposed to have been derived from the Anglo-Saxon "folk mote,"

in contradistinction, perhaps, to the "hallmote," or court baron, which consisted of the freeholders, sitting in the hall of the manor.

Though usually found in connection with manors, the leet was not, properly speaking, a manorial court. There were town leets, borough leets, and hundred leets. But it was in connection with the manor, to whose internal organization it was peculiarly adapted, that the court leet reached its highest development. Though held by the steward, with the aid of the freemen of the manor (they were not required to be freeholders, as in the court baron), it was still regarded as belonging to the King. It was, in effect, a royal magistrate's or police court, having complete jurisdiction only of minor offenses (misdemeanors) and the jurisdiction of a committing magistrate in cases of felony and treason. These latter it referred to the superior tribunals of the country for trial and punishment. The court has now completely lost its importance, having been superseded by the police and county courts, though it still has a nominal existence in some manors. See **COURT BARON**; **MANOR**; and consult the authorities referred to under **MANOR**, also Jacob, *Law Dictionary*, title "Court Leet" (London, 1809); Pollock and Maitland, *History of English Law* (2d ed., London and Boston, 1899); Gurdon, *History . . . of Court Baron and Court Leet* (London, 1731).

COURTLEIGH, WILLIAM LOUIS (1869–). An American actor, born at Guelph, Ontario, Canada. In 1889 he made his first appearance on the stage in *Brother and Sister* under John Dillon. He appeared in more than 50 plays: in *Northern Lights* (1896) as John Swiftwind, in *The Great Northrest* (1897) as Donelli, and in *Hedda Gabler* (1898); *A Rich Man's Son* (1899); *Lost Ruer* (1900); *The Merchant of Venice* (1901); *Sherlock Holmes* (1905); *What Ails You* (1912), and *Divorçons* (1913).

COURTLY, SIR HARCOURT. An old beau in Dion Boucicault's *London Assurance*. His son Charles wins away from him the heiress he was to marry.

COURTLY NICE, SIR. An insignificant fop, the principal character of Crowné's comedy *Sir Courtly Nice*.

COURTMANS-BERCHMANS, KÖÖRTMÁNS BÉRK'MÁNS, JOANNA DESIDERIA (1811–90). A Flemish author, born (Joanna Berchmans) at Oudegend, East Flanders. After the death of her husband, in 1856, she conducted a school at Maldegem. She was closely identified with the movement aiming at the advancement of Flemish literature. Several of her poems and even more of her stories enjoy great popularity. They include: *Het geschenk van den jaeger* (1864), which won the Flemish literature prize in 1864; *De zwarte Hoeve* (2d ed., 1866); *De Koevochter* (1873); *De Hoogmoedige* (1882).

COURT-MARTIAL. See **COURTS**, MILITARY.

COURTNEY, KÖRT'NI, LEONARD HENRY COURTNEY, BARON (1832–). An English Liberal-Unionist statesman, born at Penzance. He graduated at Cambridge in 1855 and was called to the bar three years later. From 1872 to 1875 he occupied the chair of political economy at University College, London. He was a member of Parliament in 1876–1900, and became Undersecretary of State for the Home Department in 1880, and for the Colonies in 1881; Governor of Madras in 1882; and Privy Coun-

cilor in 1889. He served on the Labor Commission in 1893-94, and became known as a strong advocate of proportional representation. In 1906 he was raised to the peerage as Baron Courtney of Penwith. He favored the woman's movement. He wrote *The Working Constitution of the United Kingdom* (1901) and contributed to the *Times* and *Nineteenth Century*.

COURTNEY, WILLIAM LEONARD (1850-). An English author, born at Poona, India, and educated at Oxford. In 1873 he became headmaster of Somersetshire College, Bath, and in 1894 editor of the *Fortnightly Review*. Among his works are: *Studies on Philosophy* (1882); *Constructive Ethics* (1886); *Studies New and Old* (1888); *Life of John Stuart Mill* (1889); *The Idea of Tragedy* (1900); *The Development of Maeterlinck* (1904); *The Feminine Note in Fiction* (1904); *Rosemary's Letter Book* (1909); *In Search of Egeria* (1911).

COURTNEY, WILLIAM PRIDEAUX (1845-1913). An English retired official and writer, brother of Baron Courtney. He was born at Penzance and early (1865) entered the office of the Ecclesiastical Commissioners, from which he was retired in 1892. He wrote on political biography and history and published *Register of National Bibliography* (3 vols., 1905-12), and, with G. C. Boase, *Bibliotheca Cornubiensis* (3 vols., 1874-82), and contributed to the *Encyclopædia Britannica* and the *Dictionary of National Biography*.

COURT OF CHIVALRY. See CHIVALRY, COURT OF.

COURT OF CLAIMS. See CLAIMS, COURT OF.

COURT OF COMMERCE. See COMMERCE COURT.

COURT OF COMMON PLEAS. See COMMON PLEAS, COURT OF.

COURT OF INQUIRY. See COURTS, MILITARY.

COURT OF LIONS. The most famous court of the Alhambra, taking its name from 12 white marble lions from whose mouths streams of water flowed into a central alabaster basin. The tiled court is surrounded by 124 columns delicately ornamented in filigree and colors, supporting a low gallery. For illustration, see ALHAMBRA.

COURT OF LOVE (Fr. *Cour d'Amour*). The name applied in the later Middle Ages to groups of noble ladies who often, while assembled to listen to the declamations of the troubadours, took occasion to decide upon questions of courtesy and etiquette, particularly in affairs of love. According to some authorities these courts formed regular institutions during the twelfth century, the custom flourishing especially in Provence. There was a code (still preserved) of 31 articles called *De Arte Amatoria et Reprobatione Amoris*, by André, a royal chaplain, who lived in the middle of the twelfth century. Decisions are said to have been based upon this code. A typical example of the questions submitted to such tribunals is the following: If a lady listened to one admirer, pressed the hand of another, and touched with her toe the foot of a third, which of these three was the favored suitor? Among the eminent ladies who presided over these "courts" were Queen Eleanor of Guienne and her daughter Marie de France, Countess of Champagne. René of Anjou, in the fifteenth century, made an ineffectual effort to resuscitate these "courts." Consult: Meray, *La vie au temps des cours d'amour* (Paris, 1876),

and Reynouard, *Choix de poésies originales des troubadours*, vol. ii (ib., 1817).

COURT OF LOVE, THE. A poem assigned to Chaucer, but possibly of later origin. It appears in the edition of 1561.

COURT OF REQUESTS. An inferior court of equity jurisdiction, instituted in the reign of Henry VIII for the purpose of affording relief to the Lord Chancellor. Its authority was limited to cases coming within the jurisdiction of the High Court of Chancery, but deemed of too small importance to engage the attention of that august tribunal. It was presided over by the Lord Privy Seal, assisted by judges known as Masters of Requests. It never attained great importance, and was abolished by Act of Parliament in 1641 (Stat. 16 and 17 Car. I, c. 10).

The courts of conscience were also known as courts of requests. See CONSCIENCE, COURTS OF.

COURT OF SESSION. The highest civil tribunal in Scotland, instituted in the reign of King James V. The object of its institution was to discharge the judicial functions which originally belonged to the King and his council, and which, since 1425, had in a great measure devolved on a committee of Parliament, as the great council of the nation. The Court of Session consisted at first of 14 ordinary judges and a president. One-half of these judges and the president were churchmen, and the practice of appointing ecclesiastics to the bench did not cease for some time even after the Reformation. The King had the privilege of appointing, in addition to the ordinary judges, three or four peers or members of his great council to sit and vote with the Lords of Session. The president of the court was the Lord Chancellor. His office was abolished at the union, and the practice of appointing peers to sit as members of the court gradually fell into disuse.

From its foundation, till 1808, the Court of Session consisted of one court; in that year it was divided into what are known as the first and second divisions, constituting ordinarily two separate courts possessing coordinate jurisdiction. The Lord President is still president of the whole court when called together for consultation, but on ordinary occasions he officiates simply as president of the first division. In 1830 the number of judges in the Court of Session was reduced to 13, and that is still the full number. Of the five lords ordinary, only four sit daily. The judgments of the outer house, with a few statutory exceptions, are appealable to the inner house. The youngest judge, or junior lord ordinary, officiates in a separate department of the outer house, called the "bill chamber," where summary petitions and other branches of business peculiarly requiring dispatch are disposed of. This department alone is open during the vacations of the court, the judges, with the exception of the Lord President and Lord Justice Clerk, officiating in it in rotation. Either division of the Court of Session may call in the aid of three judges of the other, when equally divided in opinion. In cases of still greater difficulty, the lords ordinary are also called in, and a hearing before the whole court, or *in presence*, as it is called, takes place.

Since the Act 31-32 Vict., c. 100, no hearings before the whole court have taken place; the cases being decided on written arguments submitted to the judges. The judges of the Court of Session are appointed by the crown and hold their offices for life. No one is eligible to the

office unless he has served as an advocate or principal clerk of session for five years or as a writer to the signet for 10 years. See COURT.

COURTOIS, koor'twā', GUSTAVE CLAUDE ETIENNE (1852-). A French figure and portrait painter, born at Pusey, Haute-Saône. He studied with Gérôme in Paris and in 1889 won the gold medal at the Paris Exposition. His genre and historical pictures include "Narcisse" (Marseilles) and "Dante and Virgil in Hell" (Besançon). Among his recent works, exhibited at St. Louis in 1904, are "Adam and Eve in Eden," "Cupid Feasting," and a portrait of Mme. G. From 1880 to 1890 he was the most fashionable portrait painter in Paris.

COURTOIS, JACQUES (1821-76), called Le Bourignon (the Burgundian) and known in Italy as Giacomo Cortese and Il Borgognone. A Roman battle and historical painter and etcher. He was born in St. Hippolyte (Franch-Comté) and was a pupil of his father, Jean Courtois, but went to Italy at the age of 15 and spent three years with the Spanish army in Lombardy. He then worked in Bologna, Florence, Siena, and Rome, influenced successively by Guido Reni and Francesco Albani in Bologna, and by Cerquozzi and Pieter de Laar in Rome. Cerquozzi encouraged him to make battle scenes his specialty. His compositions, which usually represent cavalry combats, are remarkable for their fresh and spirited conception and their masterly treatment of light and atmosphere. They excited great admiration and found many imitators, and are to be seen in most of the principal galleries of Europe. At the age of 36 he entered a Jesuit convent and thereafter devoted himself to religious pictures. His brother GUILLAUME, or Guglielmo, also called Il Borgognone, painted frescoes in the Quirinal Palace and in several Roman churches, among others the Lateran Basilica and San Marco.

COURT PARTY, THE. A term applied as early as 1620 to the supporters of the political policy of the Stuart dynasty as opposed to the *Country party*, during the disputes of King and Commons. At the end of the century the party represented high Toryism, Jacobitism, and High Church principles.

COURTRAI, koor'trā' (Flemish *Kortryk*). A town in the Province of West-Flanders, Belgium, on the Lys, 26 miles southwest of Ghent (Map: Belgium, B 4). Courtrai is built on both sides of the river, surrounded by walls, has a castle, a citadel, a fine old bridge flanked with Flemish towers, a noble town hall, and a beautiful Gothic church, founded in 1238 by Baldwin, Count of Flanders. The town hall, dating from the sixteenth century and now restored, contains fine chimney pieces, frescoes, and statues. Behind it is the museum of antiquities. In the church of Notre Dame is one of Van Dyck's most celebrated paintings, "Raising of the Cross." An old belfry is an interesting antique. Table damask, cotton, woolen, and bleached goods, sugar, tobacco, and oils are the articles of manufacture for which Courtrai is celebrated, as well as its Valenciennes lace and the excellent flax grown near by. The city boasts a college, an academy of painting and architecture, and an industrial school. Pop., 1890, 30,400; 1905, 34,760; 1910, 35,872. Courtrai dates back to Roman times, when it was called Cortoriacum. During the Middle Ages it was an important industrial centre. On July 11, 1302, the Flemings, citizens of Ghent and

Bruges chiefly, numbering 20,000, won a splendid victory over 47,000 French beneath the walls of Courtrai. More than 700 pairs of golden spurs, worn by the French nobility, were gathered by the Flemings, and the battle was henceforth called the "Battle of the Spurs." The town suffered greatly in the French wars of the seventeenth and eighteenth centuries.

COURTS, CHILDREN'S or JUVENILE. See JUVENILE OFFENDERS.

COURTS, MILITARY. Military courts are distinguished from civil courts both in their organization and procedure. They are divided into courts-martial and courts of inquiry, which in their various forms are described below.

Courts-Martial (Fr., military courts) are statutory institutions for the enforcement of order and discipline in armies and navies. The American army is governed by a military code mainly derived from that of England. The military tribunals instituted in America and England for the administration of this code do not differ materially in composition, power, or procedure. The court of the constable and marshal recognized in the Statute of Richard II, c. 2, appears to have been the first in England to administer military justice. The office of high constable was abolished in the reign of Henry VIII, and with it lapsed all the criminal jurisdiction of this court. From this time until 1689, when military courts were recognized by statute, military law was administered by means of commissioners, by the general in command of troops, or by means of deputies appointed by him. These commissioners or deputies were usually officers of the army and constituted courts or councils of war. Some time prior to the passing of the Mutiny Act these councils of war were called courts-martial, and with few modifications are now the existing military tribunals.

American courts-martial are instituted by authority of Congress, in pursuance of a power, conferred by the Constitution, to try offenses committed while the party is in the military service. These courts are (1) the general court-martial; (2) the special courts-martial; (3) the summary courts-martial. The jurisdiction of the general court-martial extends to every person subject to military law for any offense within the cognizance of a military court. It is the only military court that can try a commissioned officer, and it takes cognizance of the serious offenses committed by enlisted men. The power to assemble a general court-martial is given by statute to the President of the United States, the commanding officer of a territorial division or department, the superintendent of the military academy, the commanding officer of an army, a field army, an army corps, a division, or a separate brigade, and, when empowered by the President, the commanding officer of any district or of any force or body of troops. The statute provides that a general court-martial may consist of any number of officers from 5 to 13 inclusive, and that it shall not consist of less than 13 when that number can be convened without manifest injury to the service. The officers who are competent to appoint a court-martial are competent to appoint a judge advocate for the same. The judge advocate prosecutes in the name of the United States and is, under certain circumstances, counsel for the prisoner. He summons witnesses for prosecution and defense. The original charges are sent to this officer, and if he considers any amendment necessary he communi-

cases with the officer appointing the court. When the convening officer has satisfied himself that the charge preferred discloses an offense under the Articles of War (q.v.), and that the evidence forthcoming is sufficient to justify the trial of the accused, he issues an order defining the place and time of the meeting of the court, and naming, in the order of their rank in the service, the officers who are to compose it.

When a commissioned officer is to be tried, the officer appointing the court details, if he can, without prejudice to the service, officers of rank equal or superior to that of the accused. He also avoids detailing the officer who has investigated the charges against the accused, or one who will be a principal witness against him, or the immediate commanding officer of the accused. A member of a court of inquiry respecting the matter on which the charges are founded, or an officer who has a personal interest in the case, is not detailed. An officer who is the accuser or is a witness for the prosecution is forbidden by statute from sitting as a member of the court-martial for the trial of the case in which he is such witness or accuser. Court-martial procedure does not differ materially from that of the ordinary criminal courts of the country. This court is, however, a judge of the law as well as of the facts of the case it tries. Before it proceeds upon any trial the judge advocate administers an oath to each member which requires him, as a juror, to well and truly try and determine, according to evidence, the matter . . . before him, etc., and as a judge to duly administer justice without partiality, favor, or affection, etc. This oath includes also one of secrecy as to the votes of members, and of the sentence of the court, until approved. The judge advocate is also required to take a similar oath of secrecy. Congress has power to prescribe not only the organization and jurisdiction of courts-martial, but also their practice, and the mode of executing their sentences. It has secured to the accused a right of challenge to a member of his court, and immunity from a second trial for the same offense. It has fixed the period of time within which the accused must be prosecuted. The form of procedure for a general court-martial is laid down in works treating of the subject of military law and in the "Manual for Courts-Martial," a government publication issued generally to the service.

Special Courts-Martial were established by the Act of March 3, 1913, which became effective July 1, 1913. By the operation of this act the garrison and regimental courts formerly provided for cases not capital were abolished. Special courts-martial may consist of any number of officers, from three to five inclusive, and a judge advocate. The same eligibility rules as in general courts-martial apply. Special courts-martial may be appointed by the commanding officer of a district, garrison, fort, camp, or other place where troops are on duty, and the commanding officer of a brigade, regiment, detached battalion, or other detached command, may appoint special courts-martial for his command, but such special courts-martial may in any case be appointed by superior authority when by the latter deemed desirable. Special courts-martial may try any person subject to military law, except an officer, for any crime or offense not capital made punishable by the Articles of War. These courts have power to adjudge punishment not to exceed confinement at hard labor for six

months or forfeiture of pay for six months, or both, and in addition thereto reduction to the ranks in cases of noncommissioned officers. The procedure and record are the same as for general courts-martial, except that testimony is not ordinarily recorded.

Summary Courts-Martial consist of one officer and may be appointed by the commanding officer of any fort, garrison, or other place where troops are on duty or of any regiment, battalion, or detachment. Its proceedings are summary in character, and its record is meagre. It may try any soldier, except one holding a certificate of eligibility to promotion, for any offense not capital and may adjudge punishment not to exceed confinement at hard labor for three months or forfeiture of three months' pay, or both, and in addition thereto reduction to the ranks in cases of noncommissioned officers. The authority appointing a summary court approves or disapproves its action. This court, as instituted in the United States, has no power to try capital cases or commissioned officers. In England this court has been instituted for the purpose of trying offenses committed in active service, which, with due regard to the public service, could not be tried by the ordinary courts. It is competent to try any officers, soldiers, or other persons subject to military law for any offense, and, if composed of three officers, can award all the punishments of a general court-martial.

A Court of Inquiry is, in its function, analogous to a grand jury in civil procedure. It is convened to examine into the nature of any transaction of, or accusation or imputation against, any officer or soldier in the service. Unless specially ordered to do so, it does not give an opinion on the merits of the case it investigates. A dissenting opinion is authorized. A court of inquiry may be ordered by the President or by any commanding officer, but shall never be ordered by a commanding officer, except upon a demand by the officer or soldier whose conduct is to be inquired into. It consists of one or more officers, not exceeding three, and a recorder. The order convening a court of inquiry details the members and recorder by name, specifies the subject matter of inquiry, and directs a report of the facts, or of the facts with opinion. Under the military laws of the United States a court of inquiry and the recorder thereof have the power to summon witnesses and to take evidence on oath. This is not so in the English service, where it has no judicial power, and is simply a board directed to collect evidence with respect to a transaction into which the commanding officer himself cannot conveniently inquire. A court of inquiry, wrote Sir Charles Napier, "ought generally to be a closed court, no one allowed to enter but such individuals as are called for, and who, being privately examined, are sent out. . . . It is generally objectionable to make a court of inquiry an open court."

Military Courts of Other Countries. In the army of Germany there are general and regimental courts. In trials of enlisted men a certain proportion of the members of the court are of the rank of the accused. In the Russian army there is a supreme tribunal at St. Petersburg, and district and regimental courts-martial. In the French army individual officers have large powers of imprisonment, and there are regiments and courts of discipline for hard characters. In the Austrian army there are courts of first instance, and courts of appeal from the former.

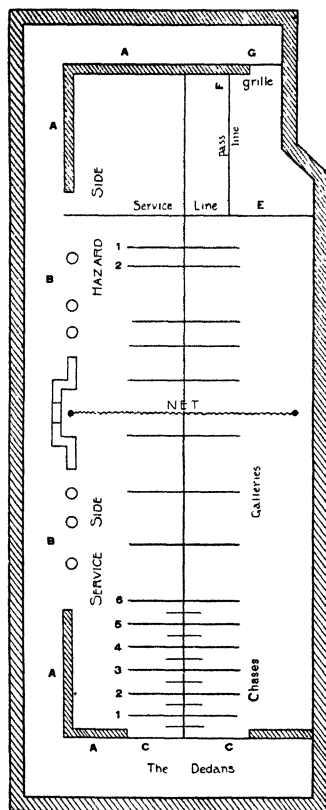
Military lawyers are also attached to each regiment to help in the administration of military justice.

Bibliography. A *Manual for Courts-Martial* was prepared by direction of the Secretary of War for the use of the army of the United States in 1910 and has been amended to contain all changes up to August, 1910. For the English practice, Simmons, *Courts-Martial* (London, 1873), may be consulted. See MILITARY LAW.

COURTSHIP OF MILES STANDISH,

THE. A hexametric poem by Longfellow (1858).

COURT TENNIS. Indoor tennis (see diagram). Usually the court occupies an entire



COURT TENNIS.

building and is lighted from the roof. The playing space is usually about 96 by 32 feet, surrounded on three sides by a corridor about 6 feet wide (the penthouse), which has a sloping roof about 7 feet high. The spectators occupy the *dedans*, or the part of the penthouse situated in the rear of the court, and separated from the same by an open grating. The most complete courts have floors of asphalt, and cement walls painted black to a height of 18 feet. The nets divide the court, and also the *service* and *hazard* sides of the game. The *tambour* is a projection on the hazard side, resembling a chimney, and

near it (in the penthouse) is the *grille*. The *chases* are numbered on the floor (from 1 to 6) and are employed to divide part of the court into the number of spaces required by the game. In playing the game the server must stand in the service court and serve the ball over the penthouse, it being required to strike on the penthouse roof and then roll off into the receiving court. The player on the hazard side strikes it on the bound wherever he chooses, if only it first strikes the ground on the opposite side of the net; e.g., he may strike it against the nearest wall, so that it rebounds across the net. A "chase" is called when the player fails to strike the ball before the second bound, unless he is on the hazard side and beyond the service line. Further, a record is made of the cross lines at which the ball bounds, which, however, does not affect the score unless the game stands at 40, in which event sides are changed and the contestants play for the "chase." The player responsible for the "chase," by permitting the same to be made, will attempt to return the ball nearer to the end wall than the point at which it was marked, to insure its bounding a second time, making the attempt as often as his opponent returns the ball until he either succeeds or misses. In the former event he is credited with the "strike"; while in the latter his opponent scores. For more detailed information regarding the game, its scoring, and its history, see TENNIS.

COURT THEATRE, THE. A playhouse for comedies and farces, situated in Sloane Square, London. Originally a chapel built in 1818, it was turned into a theatre.

COUSA, JOHN. See ALEXANDER JOHN I.

COUSE, E(ANGER) IRVING (1866-). An American painter. He was born in Saginaw, Mich., and studied at the Art Institute, Chicago, the National Academy of Design, New York, and in Paris at the Ecole des Beaux-Arts and Académie Julian under Bouguereau and Robert Fleury. He lived 10 years in France, where he painted charming scenes of the Normandy coast. After his return to America he devoted himself to depicting the life and habits of the Taos Indians, a Pueblo tribe in New Mexico. He reveals the poetical and philosophical rather than the savage and warlike side of the Indians, and his skillfully executed pictures are full of sentiment. Among those in public galleries are: "Elkfoot" (National Gallery, Washington), "The Forest Camp" (Brooklyn Museum); "The Tom-Tom Maker" (Lotos Club, New York); "Medicine Fires" (Montclair Gallery, New Jersey); "Shapanagons, a Chippewa Chief" (Detroit Museum). He was elected to the National Academy of Design in 1911. Among his more recent works are: "Mending the War Bonnet"; "Making Pottery" (awarded the Carnegie prize); "Rushing Water" (1912); "Twilight, Taos Pueblo" (1913).

COUSIN, kōō'zān'. The name of two prominent French artists of the sixteenth century.—JEAN the elder (1490-1560), sculptor, painter, and wood engraver, was probably born at Sens, where he passed most of his life, and is said to have designed some of the stained-glass windows in the cathedral. In 1540 he was occupied in Paris with the festive decorations for the entry of Emperor Charles V. His only authentic painting is "The Last Judgment" (Louvre), although many others have been ascribed to him. As a sculptor he modeled the fine tomb of

Admiral Chabot, now in the Louvre, and the sculptures formerly in the chapel of Pagny (Burgundy). A large number of wood engravings have also been credited to him. Shortly before his death he published *Livre de Perspective de Jean Cousin, Senonois* (1560).—His son and pupil, JEAN the younger (c.1522-94), was born in Sens. He certainly designed the glass windows and probably the sculptures of the castle of Fleurigny (Sens), and probably the glasses in the church of Saint-Gervais, Paris, but not those of the Sainte-Chapelle at Vincennes. He painted five portraits of the Bouvyer family, and was the author of a book on *The True Science of Portraiture*, and also probably a *Book of Fortune*, containing 200 drawings. He is said to have illustrated many other works, including Ovid and Æsop. Consult: Roy, "Les deux Jehan Cousin," in *Mem. de la Société Archéol. de Sens*, vol. xxiv (1909); Dimier, *French Painting in the Sixteenth Century* (1904), id., *Bulletin de l'Art ancien et moderne* (1909).

COUSIN, VICTOR (1792-1867). A French philosopher and historian. He was born in Paris and studied with such brilliant success at the Ecole Normale that in 1815 he was appointed assistant to Royer-Collard in the chair of philosophy at the Sorbonne. He threw himself heartily into the reaction against the sensationalistic philosophy and literature of the eighteenth century, which was then in possession of the field. (See SENSATIONALISM.) In 1817 he visited Germany, where he was introduced to bolder and more speculative systems of philosophy than any he had yet known, becoming acquainted with Jacobi, Schelling, Hegel, and Goethe. During a later visit to Germany, in 1824-25, he was suspected of revolutionary tendencies, and imprisoned in Berlin, where he was detained for six months. He took advantage of his compulsory detention in Prussia to study the philosophy of Hegel, which had no small influence on his susceptible intellect. On his return to France he took a decided stand against the reactionary policy of Charles X, and in 1828, when the comparatively liberal ministry of Martignac came into office, Cousin, who had for some years been suspended from his professorial functions, was reinstated in his chair. Meanwhile he had become known as an author by his editions of Proclus and Descartes (1820-26), and by the earlier volumes of his celebrated translation of Plato, which was finished in 1840. Cousin reached the height of his popularity and influence as a philosophic teacher in the years 1828-30, when often as many as 2000 enthusiastic hearers gathered around him. He was young, simple, and pure in his habits, his doctrines were for the most part new to his audience, bold, and in harmony with the spirit of the time. The finest qualities of the national genius appeared in his lectures—a wonderful lucidity of exposition, an exquisite beauty of style, such as few philosophers have equaled, a brilliancy of generalization and criticism, and a power of coordinating the facts of history and philosophy so as to make each illustrate the other and reveal their most intricate relations. At this period Cousin was one of the most influential leaders of opinion among the educated classes in Paris. After the revolution of 1830, when his friend Guizot became Prime Minister, he was made a member of the Council of Public Instruction, in 1832 a peer of France, and later director of the Ecole Normale and virtual head

of the University. His efforts for the organization of primary instruction are to be seen in the valuable reports which he drew up from personal observation on the state of public education in Germany and Holland. His influence shows itself in this sphere even to the present day. In 1840 he was elected a member of the Académie des Sciences Morales et Politiques, and in the same year became Minister of Public Instruction in the cabinet of Thiers. After the revolution of 1848 Cousin aided the government of Cavaignac, and published an antisocialistic brochure called *Justice et charité*. After 1849 he disappeared from public life.

Cousin was greater as an expounder of historical systems of philosophy than as an original thinker. At first a disciple of Royer-Collard and the Scottish school, he was attached to the psychological method of investigating, afterward a keen student of the German school, he expounded the views of Schelling and Hegel with such enthusiasm that he might legitimately enough have been considered a "German idealist." But he endeavored to mediate between the German standpoint of an impersonal reason and that of empirical psychology. In the later years of his life his views carried him to a modified Cartesianism. See DESCARTES.

Cousin's chief works, besides those already mentioned, are: *Fragments philosophiques* (1826); *Du vrai, du beau, et du bien* (1837; Eng. trans., 1854); *Cours d'histoire de la philosophie morale au XVIII^e siècle* (1839-42, containing discussions of the Sensationalistic school, the Scottish school, and Kant); *Cours de philosophie* (1828, containing an introduction to the history of philosophy, and lectures on the philosophy of the seventeenth and eighteenth centuries). He also contributed a great variety of papers to the French reviews. Besides his philosophical work he rendered a very real service to the history of the seventeenth century in France by his luminous and stimulating sketches of Mesdames de Longueville, de Haute-foir, de Sahlé, and a number of other great personages of the period. Consult: Hamilton, *Discussions on Philosophy, Literature, Education, and University Reform* (London, 1852); Taine, in *Les philosophes français du XIX^e siècle*. (Paris, 1857); Janet, *Victor Cousin et son œuvre* (ib., 1885); Barthélemy Saint-Hilaire, *Victor Cousin, sa vie et sa correspondance* (3 vols., ib., 1895); Jules Simon, *Victor Cousin* (ib., 1887); Charles Waddington, "Un grand homme et son secrétaire," in *Séances et travaux de l'académie des sciences morales et politiques*, vol. clxx (ib., 1908); Babbitt, *The Masters of Modern Criticism* (Boston, 1912).

COUSINE BETTE, kō'sān' bêt, LA. A novel by Balzac (1846) dealing with the love of an aunt and a niece for the same youth.

COUSIN MICHEL, mē'kel. A humorous appellation for the German native, corresponding to Brother Jonathan as applied to the American.

COUSIN-MONTAUBAN, kō'sān' mōn'tō'-bān', CHARLES GUILLAUME MARIE. See PALIKAO, COUNT OF.

COUSIN PONS, kō'sān' pōn, LE. A novel by Balzac (1847), dealing with the last moments and death of an old bachelor whose invaluable collection of paintings made him an object of solicitude and intrigue to relatives and strangers.

COUSINS, kōz'nz, SAMUEL (1801-87). An English mezzotint engraver. He was born in

Exeter and was early apprenticed to the mezzotint engraver S. W. Reynolds. The famous plates of Lady Acland and children, and of Master Lambton (after Lawrence) are among his first independent works. These were followed by many portraits and pictures after Reynolds, Lawrence, Gainsborough, J. E. Millais, Wilkie, Landseer, and others. His work is characterized by extreme delicacy and versatility of treatment and interprets the originals in a truthful and graphic manner. The British Museum contains a large collection of his mezzotints. Cousins was the first to receive the rank of Academician Engraver (1855). Consult his biography by A. Whitman (London, 1904).

COUSSEMAKER, kōōs'má'kâr', CHARLES EDMOND HENRI DE (1805-76). A French historian of music, born at Bailleul (Nord). He studied at the Douai Lycée and completed his musical education under Moreau and Lefebvre. He devoted himself principally to researches on mediæval music and published *Histoire de l'harmonie au moyen-âge* (1852); *Drames liturgiques du moyen-âge* (1861); *Les harmonistes des XIIème et XIIIème siècles* (1864); *Les harmonistes du XIVème siècle* (1869), and *Scriptores de Musica Medii Ævi* (1866-75), his principal work, reprinted by Moser in 1908.

COUSTOU, kōō'stōō'. A family of French sculptors.—**NICOLAS** (1658-1733), born in Lyons, studied first with his father, François, a wood carver, and later with his uncle Antoine Coyzevox in Paris. After three years in Rome he returned to Paris, where he was appointed rector of the Academy in 1720, and chancellor in 1733. His extremely numerous works include decorations for the palaces of Versailles, Trianon, and Marly, in which he was assisted by his brother Guillaume; they include: "Union of the Seine and the Marne" and "Daphne Pursued by Apollo," in the Garden of the Tuileries, statues of Julius Cæsar and of Louis XIV, in the Louvre, and "The Descent from the Cross," in the choir of Notre Dame. His younger brother, **GUILLAUME THE ELDER** (1677-1746), studied under his father and Antoine Coyzevox and spent several years in Rome, where he assisted Pierre Legros. Besides work done in collaboration with his brother, and many portrait busts and mythological statues, he modeled the kneeling statue of Louis XIII in Notre Dame, the fine group of "Ocean and Mediterranean," and the vigorous and spirited marble groups of the "Horses of Marly" at the entrance to the Champs Elysées, which inaugurated a new and more natural era of French sculpture. He was appointed director of the Academy in 1735.—**GUILLAUME THE YOUNGER** (1716-77), son and pupil of the former, won the Prix de Rome in 1735. His works include religious and mythological statues, such as "Apotheosis of St. François Xavier" in the Eglise Saint-Paul, Bordeaux; and "Mars and Venus" in the castle of Sans Souci, Potsdam, and the tomb of the Dauphin, father of Louis XVI, in the cathedral of Sens. Consult Lady Dilke, *French Architects and Sculptors of the Eighteenth Century* (1900), and "Les Coustou," *Gazette des Beaux-Arts*, vol. i (1901).

COUTANCES, kōō'tāns'. A picturesque town in the Department of La Manche, France, on the Soule, 41 miles south of Cherbourg (Map: France, N., D 3). An old city, it is built on a conical hill 7 miles from the English Channel, and is the seat of a bishopric. Its cathedral of Notre Dame is one of the finest specimens

of ecclesiastical architecture in the early Pointed style of Normandy. Other noteworthy features are the Gothic church of Saint-Pierre, the public gardens and museum, and the ruins of an ancient aqueduct. Coutances has manufactures of muslins, lace, yarns, cotton goods, pianos and organs, and a trade in grain. Marble is quarried, and there is a good market for horses and cattle. Pop., 1891, 8145; 1901, 6991; 1911, 6599. The town is the Constantia of the Romans. For a history and description, consult *Annuaire guide de Coutances* (Coutances, 1897); U. Chevalier, *Repertoire des sources et topobibliographie* (Montbéliard, 1894-99).

COUTHON, kōō'tōn', GEORGES (1755-94). A French politician and revolutionary leader, born at Orsay, in Auvergne, Dec. 22, 1755. He practiced law successfully at Clermont, where he acquired great popularity on account of his fine intellectual powers and grave gentleness of character. At first a moderate Republican, he was elected to municipal office and later, in 1791, was sent by the electors of Puy-de-Dôme to represent them in the Legislative Assembly. He became more and more radical with the progress of the Revolution, and, though a chronic invalid, he poured forth invectives against royalty and the Church from the tribune. He voted for the death of the French monarch without delay or appeal to the country. Elected to the Convention, Couthon attached himself to Robespierre, was appointed a member of the Committee of Public Safety in 1793, and sent against the insurgent city of Lyons. After the entrance of the Republican army Couthon showed comparative moderation and controlled the soldiery. Only 24 of the insurgents were put to death, and though property was ruthlessly destroyed, the lives of the citizens were respected until the arrival of Collot d'Herbois (q.v.). Couthon returned to Paris, formed with Robespierre and Saint-Just a supreme tribunal, and made himself conspicuous by his extreme virulence against England. He assisted Robespierre in destroying the partisans of Hébert and Danton, but was himself involved in the ruin which overtook his chief. After a vain attempt at suicide Couthon was borne to the guillotine, July 28, 1794, together with Saint-Just and Robespierre. Consult: Mège, *Correspondance de Couthon* (Paris, 1872); Aulard, *Les orateurs de la législative et de la convention* (Paris, 1885-86); Morse-Stephens, *The French Revolution* (New York, 1891).

COUTRAS, kōō'trá'. A town in the Department of Gironde, France, on the left bank of the Dronne, 26 miles northeast of Bordeaux (Map: France, S., D 3). Coutras has a trade in flour, and the district produces red wine and brandy. The place is noteworthy on account of the bloody victory gained here in 1587 by Henry of Navarre over the forces of the Catholic League. Pop., 1891, 4231; 1901, 4062, 1911, 4807.

COUTTS, kōōts. See BURETT-COUTTS.

COUTURE, GUILLAUME (1851-). A Canadian musician and composer, born and educated in Montreal. He early manifested an unusual talent for music and, when 13 years old, became organist of St. Bridget's Church, Montreal, and, when 16, organist of the church of St. James. Later he studied for five years in Paris, where he was admitted to the National Society of Music and the Paris Conservatory of Music and was appointed organist of Sainte-Clothilde's Church. He returned to Canada in

1878, founded the *Société des symphonistes*, and in 1880 became director of the Montreal Philharmonic Society. He was appointed professor of musical theory in several educational institutions in Montreal, including the McGill Conservatory of Music, and became director of the Amateur Operatic Club and of the Montreal Symphony Orchestra. He published many musical compositions, some of which were accepted and performed by the National Society of Music, Paris—the only Canadian compositions thus honored. In 1900 he was named, by the French government, Officier d'Institut Public.

COUTURE, koo'tur', THOMAS (1815-79). A French historical and genre painter. He was born at Senlis, Dec. 21, 1815. He studied under Gros and Delaroche without being a follower of either. In 1837 he obtained the Prix de Rome, and in 1845 his picture, "The Thirst for Gold" (Toulouse Museum, replica in Amsterdam), brought him a wide reputation. His "Romans of the Decadence" (1847) obtained a first-class medal and created a great and lasting sensation and is now in the Louvre. Among his other works are the "Falconer" (1855), "Damocles" (1872), and "Day Dreams" (1855, in the Metropolitan Museum). Under Napoleon III he became court painter, but he was not enough of a courtier to please the Emperor and resigned his position. In 1869 he retired to Villiers-le-Bel, near Paris, where he died. He was neglected in France, but his pictures were purchased by foreigners, especially by Americans. He also painted the frescoes in the chapel of the Virgin, Saint-Eustache, Paris, and during his last period many portraits, of which there are frequent examples in the museums of southern France. The chief beauty of his art is its rich, glowing color, and it is also good in line. He was very important as a teacher, counting Fuerbach, Victor Muller, Puvis de Chavannes, Manet, and many Americans, Russians, and Germans among his pupils. His book, *Conversations on Art Methods*, was translated by Stewart and published in New York in 1879. Consult: Healey, "Couture," in Van Dyck's *Modern French Masters* (New York, 1896); Claretie, *Peintres et sculpteurs contemporains* (Paris, 1873); Flat, "Un peintre assimileur," in *Revue Politique et Littéraire* (Paris, 1913).

COUVADE, koo'vād' (Fr., a brooding, from *couver*, to hatch, from Lat. *cubare*, to lie down). A custom of certain primitive peoples in accordance with which the father of a new-born babe adopts the rôle of invalid while the mother goes about her ordinary occupations. The custom was well developed on both hemispheres. On the authority of Strabo and later writers it was ascribed to the Basques of Europe, a theory which has been much discussed, while Ripley is skeptical as to the present existence of the custom among the Basques. Traces of it are found in Asia and in North America, and it has been well observed in South America by Rodway (*In the Guana Forest*, 1895) and others. Indeed, South America and the West Indies are the areas in which the couvade has been developed to the highest degree. Tylor was at first inclined to explain the usage as implying a physical bond between parent and child, so that the father's actions are believed to affect the child's condition. Later Tylor adopted Bachofen's theory that the couvade was the signpost of a change from maternal to paternal descent; the motive he originally assigned to the practice

remains valid, but the "sympathetic prohibitions may be interpreted as originally practiced by the mother only, and afterward adopted by the father also." This later explanation was in accord with the theory, until recently current among anthropologists, that maternal descent invariably preceded paternal descent. This position, however, has been so vigorously assailed that Tylor's original interpretation of the couvade as simply a result of belief in sympathetic magic seems preferable. Consult further: Ripley, *The Races of Europe* (1899); McGee, "The Seri Indians," 17th Rep. Bur. Am. Ethnology; Tylor, *Researches into the Early History of Mankind*, pp. 291 ff.; id., "On a Method of Investigating the Development of Institutions," *Journal of the Anthropological Institute*, vol. xviii, pp. 254 ff. (1889). Ploss, *Das Weib* (1897); etc. See MAN, SCIENCE OF.

COUXIA, koo'shé-a, or **COUXIO**, koo'shé-o. A South American monkey. See SAKI.

COVA'RIANTS. See FORMS.

COVE (AS. *cofa*, chamber, Icel. *kofi*, hut, MHG. *kobe*, Ger. *Koben*, stall). In architecture, a long concave surface approximately a quarter circle in section, interposed in place of a cornice between the wall and ceiling, or employed to support a projecting story or balcony, or even to form a crowning feature to a structure, as on the gateway of the Certosa at Pavia, or the front of San Lorenzo fuori at Rome. The coves (or coving) of many splendid Italian and French ceilings of the sixteenth to the eighteenth centuries were intersected by vaulted lunettes called *penetrations*, and both coves and penetrations were richly decorated with paintings, stucco relief, and gilding. Famous examples are in the library of Siena Cathedral and the Loggia of the Farnesina at Rome, decorated by Raphael and his pupils.

COVENANT (OF. *covenant*, Fr. *convenant*, It. *conveniente*, from Lat. *convenire*, to agree, from *com-*, together + *venire*, to come). A term much used in theology, derived from the Hebrew *berith* of the Old Testament and the Greek *diathékē* of the New, both meaning "covenant." It was emphasized in the federal theology during the constructive Protestant period (by Cocceius, 1603-69 (q.v.)), and was incorporated in the Westminster Confession. God is represented as making successively, with Adam, Noah, Abraham, and all Israel, covenants, which are substantially the same covenant, under which Israel is adopted as God's special and chosen people and is bound to Him in close and mutual obligations. The covenants of the Old Testament are all substantially "covenants of works," putting blessing upon the basis of obedience, the one covenant of the New Testament, which replaces the others, conditions blessing upon faith in Jesus Christ. See FEDERAL THEOLOGY.

COVENANT. In English law, a contract by deed or specialty, i.e., one in which the validity of the promise does not depend upon consideration (q.v.) as in the case of simple contracts, but upon the formality of execution of the contract by sealing and delivery. The essential characteristic of covenants distinguishing them from other specialties is the express promise to pay a sum of money or to perform a certain act. Thus a bond differs from a covenant only in that it is a mere acknowledgment of indebtedness without an express promise to pay the amount of the bond.

The term "covenant" is also used in a nar-

rower sense to indicate the promise or stipulation contained in a specialty or deed which is incidental to its main purpose, as, e.g., the covenants of warranty contained in a deed of conveyance. Although consideration was not required to render a covenant valid and enforceable at law, courts of equity deemed the seal to be presumptive evidence of consideration only, and would not compel the covenantor to perform his promise if it appeared that no consideration was given for it. This is probably the effect of modern statutes providing that the seal on sealed instruments is only presumptive evidence of consideration.

In general, covenants, from their nature, are required to be expressed in the instrument by which they are created, but in certain exceptional cases they are implied from the character of the instrument itself, as, e.g., the covenants implied in a lease (q.v.).

At common law the form of action used to recover damages for breach of covenant was also known as covenant. Under modern codes of procedure and practice acts, the action of covenant has become obsolete, the same office being performed by the various statutory forms of contract action. Covenants contained in the same instrument are said to be *mutual, concurrent, or dependent*. Covenants are said to be *mutual* when performance by each of the parties entering into the covenant is a condition of performance by the other, so that no action for breach of covenant will lie unless the party suing has performed or tendered performance of his covenant before bringing his action. An *independent covenant* is one which must be performed by the covenantor, irrespective of the performance of the covenantee's covenant in the same instrument.

Real covenants, or covenants which at early common law bound the covenantor's heirs to the extent to which they inherited real estate, are now of slight importance, since all of the property of a deceased person, real as well as personal, may be subjected to the payment of his debts. See ADMINISTRATION.

Covenants running with the land are real covenants which relate to the use of real estate or require the covenantor to do something with reference to it. Their peculiarity is that any subsequent transferee of the real estate is entitled to the benefit of the covenant, and may sue upon it, and that, in certain exceptional instances, when the covenant imposes a burden upon the owner of the real estate, the liability to perform the covenant passes to the transferee of the real estate. Strictly speaking, at common law, the burden of a covenant will run with the land only where the relation of landlord and tenant subsists between the parties or, in some of the United States, where the covenant relates to a subordinate interest, as an easement, which the covenantee has in the land of the covenantor. In equity, however, land may be subjected to certain restrictions by covenant of the owner which are enforceable against a subsequent purchaser with notice. See ASSIGNMENT; EASEMENT.

Covenants for title are particular forms of covenant which run with the land and are made by the grantor in a deed or instrument conveying real estate. The usual covenants for title are: "The covenant of seisin (i.e., that the grantor is seised of the estate which he undertakes to convey); the covenant that the grantor has the right to convey; the covenant for quiet enjoyment (i.e., that the grantor will not inter-

fere with the use or enjoyment of the real estate by his grantee); the covenant for further assurance (i.e., that the grantor will make any further necessary conveyance to perfect his grantee's title); and the covenant of warranty, which binds the covenantee to warrant and defend the title against any one claiming under paramount title or interest in the real estate conveyed.

Formerly the effect of the covenant of warranty was to require the covenantor or his heirs to give the grantee other lands in case the title proved to be defective. In modern practice the effect of breach of any covenant for title is to entitle the covenantee or his grantee to recover damages. Covenants for quiet enjoyment and warranty, however, are not deemed to be broken until the grantee is actually disturbed in his possession. An important effect of certain covenants for title is to estop the grantor, and all claiming under or through him, from claiming any interest in the property conveyed, thus conferring upon his grantee a title by estoppel. See ESTOPPEL; WARRANTY.

Covenants to stand seised, formerly of great importance, were covenants by the owner of real estate to hold it to the use of, or in trust for, a relative. See USES; TRUST.

Consult Sims, *Treatise on Covenants* (Chicago, 1901), and Rawle, *Treatise on the Law of Covenants for Title* (5th ed., Boston, 1887). See BOND; CONTRACT; SPECIALTY; RESTRAINT OF TRADE; ETC.; and consult the authorities there referred to.

COVENANTERS. See COVENANTS, THE; PRESBYTERIANISM.

COVENANTS, THE. A term by which the Scottish people denoted association of "bands" under oath to support each other in times of danger or to maintain some principle. The most famous ones are the *National Covenant* of 1638, and the *Solemn League and Covenant* of 1643, which are often referred to simply as the Covenant, though they should be clearly distinguished. The *National Covenant* was an agreement signed by all classes in Scotland to resist by force the introduction into Scotland by Charles I of a modified form of the English *Book of Common Prayer*, and a new body of canons increasing the nominal power of the Scottish bishops. The nobles disliked the increased power of the bishops because they were beginning to look upon them as rivals, and because they feared that Charles would proceed to a recovery of the church lands; while the commons disliked the Prayer Book, not only because it was English, but also because they looked upon it as a popish innovation. The Covenant was based upon a previous one of 1581, whose object was to maintain the Scottish Presbyterian church against a Catholic conspiracy, but it added numerous citations of parliamentary acts bearing upon the subject of religion, and a mutual oath "to labor by all means lawful to recover the purity and liberty of the gospel as it was established and professed before the aforesaid innovations." It became the basis of the Scotch resistance to the King, which culminated in the two Bishops' wars and the termination of Charles's arbitrary rule.

The *Solemn League and Covenant* was an agreement between the English and Scottish parliaments by which the Scotch came with an army to the assistance of the English Parliament in the war against Charles I on condition

that Presbyterianism should be introduced into England and Ireland. The Parliament accepted the condition somewhat unwillingly, but in view of the Royalist successes in 1643, Scottish aid seemed indispensable. The Covenant was generally signed by the members of the House of Commons and the Assembly of Divines. It was imposed by ordinance upon all persons over 18 years of age, upon members of the universities, and upon officers and soldiers of the New Model, although the ordinances could not be strictly enforced. It was not only the bond of union between England and Scotland during the war, but was used as a test against the rising Independents and, as such, encountered lively opposition. The signers took oath to labor for "the preservation of the reformed religion in the Church of Scotland, in doctrine, worship, discipline, and government, . . . the reformation of religion in the kingdoms of England and Ireland, in doctrine, worship, discipline, and government, according to the Word of God, and the example of the best reformed churches," and to endeavor "to bring the churches of God in the three kingdoms to the nearest conjunction and uniformity in religion, confession of faith, form of church government, direction for worship, and catechizing." The force of the Solemn League and Covenant of 1643 was greatly hampered in England by the success of Cromwell and the Independents, who desired a wider form of toleration, but the final blow did not come until the Restoration, when both covenants were abolished and their adherents severely persecuted. That the idea of the Covenant has not died out among the Scotch is seen by the Covenant drawn up in 1912 by the Scottish Presbyterians of Ulster in their resistance to the Irish Home Rule Bill introduced by the Liberal government of Mr. Asquith. This solemn covenant was first signed by Sir E. Carson on September 28. In its general phases it follows the earlier covenants, viz., in its declaration of resistance to religious change or anything that might endanger Protestantism. This new Covenant proves how deep-seated is this method of procedure with Scottish Presbyterianism.

The covenants of 1638 and of 1643 are printed in Gardiner, *Constitutional Documents of the Puritan Revolution* (London, 1897). Consult also: Gardiner, *History of England* (ib., 1883-84); id., *Great Civil War*, vol. i (ib., 1886); Smellie, *Men of the Covenant* (New York, 1904).

COVENT (kūv'ənt) **GARDEN** (properly *Convent Garden*, from having been originally the garden of Westminster Abbey). A square in London, chiefly notable for its celebrated history and for its great market of fruit, vegetables, and flowers. As the kitchen garden of the Westminster monks it was a walled inclosure, which extended from the Strand to Longacre. It came, as a crown gift, into the possession of the Bedford family in 1552, and remained in the same hands until sold by the Duke of Bedford Dec. 16, 1913. The price paid was from \$25,000,000 to \$50,000,000 and closed the largest real estate deal ever made in London. The square was laid out by Inigo Jones in 1632, and the ancient garden was perpetuated by the continued sale of vegetables. (See **COVENT GARDEN MARKET**.) Here also is the famous opera house (See **COVENT GARDEN THEATRE**.) In the seventeenth century the neighborhood of Covent Garden was a very fashionable quarter of the town, and frequent allusions are made to the

place in plays of Charles II's time. It has artistic associations of Marvell, Dryden, Fielding, Steele, Otway, Foote, Garrick, Hogarth, Voltaire, De Quincey, Charles and Mary Lamb, Turner, and other celebrities.

COVENT GARDEN JOURNAL. A short-lived bi-weekly periodical first issued in January, 1752, by Henry Fielding, under the name of "Sir Alexander Drawcansir, Knight of the Censor of Great Britain." It soon involved Fielding in literary quarrels.

COVENT GARDEN MARKET. A great London vegetable, fruit, and flower market, established in the first half of the seventeenth century by small gardeners from the suburbs. In 1829 the rough sheds were succeeded by a market house, covering about three acres of ground, from designs by Mr. Fowler. In 1850 a flower market, covered with glass, was built on the south side of the Opera House.

COVENT GARDEN THEATRE. A famous London theatre on Bow Street, the home of grand opera. It was built in 1731 by the harlequin Rich, under a patent from Charles II to Sir William Davenant, 1662. It has been several times rebuilt. It was burned in 1808, and rebuilt in 1809 at great cost. The increased prices of admission, intended to defray part of the expenses, gave rise to the Old Prices Riots. In 1847 it was called the Royal Italian Opera House. On March 4, 1856, it was burned again, and the present structure was erected in 1858.

COVENTRY, kūv'en-trī (OE. *Coventre*, AS. *cofatrio*, cove tree, from *cofa*, cove + *tréo*, tree, or tree of Cofa; popularly etymologized as Convent Town, from the convent established there by Leofric). A manufacturing city, parliamentary and municipal borough in Warwickshire, England, on the Sherbourne, 18½ miles east-southeast of Birmingham (Map: England, E 4). It stands on a gentle eminence in a valley with a ridge of hills on the south, and contains many old houses with timbered fronts projecting into narrow streets and belonging to the fifteenth and sixteenth centuries. The modern part of Coventry, however, is well, though not regularly, built. Its most interesting public buildings are the three churches composing the "three tall spires" of Coventry. St. Michael's, built of red sandstone, in the Perpendicular style, about the fourteenth century, is said to be the largest parish church in England; Trinity Church, another Perpendicular structure, has a spire over 230 feet high; the third of the spires is that of the old Gray Friars' church. St. Mary's Guildhall, built in 1450, for the united guilds, is one of the finest examples of ornamental architecture in England. The rapid industrial growth of Coventry is responsible for the recent extension of its boundaries and the widening of many of the old streets. The municipality owns its water supply, on which it nets a substantial annual profit. It also supplies gas and electricity and maintains public baths, libraries, a technical institute, markets, crematory, and cemeteries. The city has an excellent modern sewerage system, with which is connected a sewage farm. The chief manufactures are ribbons, artificial silk, watches, sewing machines, and naval ordnance. It is the centre of the cycle and motor-car industries. The town sends one member to Parliament. Pop., 1891, 58,500; 1901, 69,900; 1905 (est.), 75,134; 1911, 106,377.

History. Coventry is a very ancient place. In 1044 Earl Leofric and his wife, Lady Godiva,

founded here a magnificent Benedictine monastery. For many years the traditional deed of Godiva (q.v.) was celebrated by a procession. In 1344 the town was incorporated. In the fifteenth century religious mysteries or plays were often acted here by the members of the various guilds before kings. Henry VIII demolished the beautiful cathedral of Coventry, as well as the ancient walls which formerly surrounded it. Here occurred the famous meeting for the intended trial by battle between the Dukes of Norfolk and Hereford, immortalized in Shakespeare's *Richard II.* Two memorable parliaments were held in the monastery of Coventry in the fifteenth century. The one contained no lawyers, while the other passed many attainders against the Duke of York, etc. In the fifteenth and sixteenth and seventeenth centuries Coventry was famous for woollens, broadcloths, caps, and blue thread bonnets. Consult Fretton, "Antiquarian Losses in Coventry," in *Archæological Journal*, vol. xxxvi (London, 1880), and Dormer, *History of Coventry* (New York, 1898).

COVENTRY. A town in Kent Co., R. I., 13 miles (direct) southwest of Providence, on the Pawtuxet River, and on the New York, New Haven, and Hartford Railroad (Map: Rhode Island, B 3). The chief industries are agriculture and the manufacture of cotton and woolen goods, and dyeing, bleaching, and mercerizing. The government is administered by town meetings. Coventry, taken from Warwick and incorporated in 1741, was the home of Gen. Nathanael Greene (q.v.) after 1770. Pop., 1900, 5279, 1910, 5848.

COVENTRY PLAYS. A set of 42 plays, combining the "Morality" and the "Mystery," acted during the sixteenth century at Coventry or thereabouts on Corpus Christi Day and probably written by the clergy. They were extremely popular and widely attended. The following reference is made to them by the elder Heywood:

"Thys devyll and I were of olde acquaintance,
For oft in the play of Corpus Christi
He hath played the devyll at Coventry "

For further information, consult Morley, *English Writers*, iv (London, 1887 et seq.).

COVE OF CORK. See QUEENSTOWN.

COVERDALE, MILES (1488-1568). An English Bible translator. He was born at Coverdale, in Yorkshire, was educated at Cambridge, was ordained in 1514 at Norwich, and became the same year an Augustinian at Cambridge. By 1526, however, his religious opinions had so far changed that he left his convent and devoted himself earnestly to the work of the Reformation. Dressed like a secular priest, he preached against confession and image worship. Shortly after that he went abroad. In 1535 he brought out his first translation of the Bible "out of Douche (German) and Latyn into Englishe," with a dedication by himself to Henry VIII. This was the first complete translation of the Bible printed in the English language. The Psalms of this translation are those still used in the Book of Common Prayer. The vexed question as to the printer of the volume has been settled, probably, by recent discoveries in favor of Christopher Froschouer, the famous Zurich printer. It also seems probable that Jacob Van Meteren, the Antwerp printer, employed Coverdale to make the translation, which was done in Antwerp. The basis was the Zurich Swiss-German Bible and Tyndale's New Testa-

ment, along with the Vulgate. It was reprinted in London in 1537, with the royal license. In 1538 Coverdale, with the consent of King Henry VIII and with the permission of Francis I, went to Paris to superintend another English edition of the Scriptures, his reason for going to Paris being that paper and workmanship were there cheaper and better than in England. The Inquisition, however, notwithstanding the royal license of Francis, interfered, seized the whole impression, consisting of 2500 copies, and condemned them to the flames. But through the cupidity of one of their executive officers, who sold a considerable number of the heretical books to a haberdasher as waste paper, some copies were saved and brought to London, along with the presses, types, etc., which had been employed in printing them. Several of the workmen also came over to London, and Grafton and Whitchurch, the noted printers of that day, were thus enabled to bring out in 1539, under Coverdale's superintendence, the "Great Bible," as it is called on account of its size. Coverdale also in 1540 edited a second edition, commonly called Cranmer's Bible, because that prelate wrote a preface to it. From 1540 to 1548 Coverdale was on the Continent. He married in the former year. On his return he became a royal chaplain and in 1551 was appointed to the see of Exeter, the duties of which office he discharged with great zeal, until the accession of Mary in 1553, when he was ejected and thrown into prison, from which he was only released after a year's confinement, on the earnest intercession of the King of Denmark, whose interest was evoked by his chaplain, Coverdale's brother-in-law, and on the condition that he should leave the country. Coverdale went to Denmark and subsequently to Westphalia, Deux Ponts, and Geneva. In 1558 he was in Geneva and is said to have had some part in the preparation of the Geneva Bible. In 1559, after the accession of Elizabeth, he returned to England, but certain notions concerning ecclesiastical ceremonies, imbibed at Geneva, operated against his restoration to the see of Exeter, and made him refuse an appointment as Bishop of Llandaff. In 1564 he was collated to the rectory of St. Magnus, London, but, owing to age and infirmities, he resigned it in 1566 and died about two years afterward. He was buried Feb. 19, 1568. Coverdale was the author of several tracts designed to promote the Reformation and made various translations from the works of the continental reformers. His works and letters were published with a memoir, by the Parker Society (Cambridge, 1844-46). Consult also *Memorials of Miles Coverdale* (London, 1838), and F. Fry, *The Bible by Coverdale* (ib., 1867). For his work on the English Bible, consult Hoare, *The Evolution of the English Bible* (ib., 2d ed., 1902), and Pollard, *Records of the English Bible* (Oxford, 1911).

COVERED WAY, or COVERT WAY. A term used in fortification to describe a passage constructed on the side of the ditch towards the enemy. As its name indicates, this passage affords covered communication along the ditch for sentinels and small bodies of men posted therein. See FORTIFICATION.

COVERLEY, kūv'ēr-lī, SIR ROGER DE. An old English dance, so called from the tune used during its performance. Neither the author of the tune nor the date of its composition is known, but the editor of the Skene Manuscript

claims the tune as Scotch, on the authority of a manuscript dated 1706, and says that north of the Tweed it is known as the "Mautman comes on Monday." The tune is variously called "Old Roger of Coverly for evermore, a Lancashire Hornpipe"; "Roger of Coverly"; "Roger a Coverly," in Gay's opera *Polly*; and "Roger de Coverly," in *Robin Hood*; and "Sir Roger de Coverly" in Fielding's *Tom Jones*. A song, "O Brave Roger de Coverly," is contained in *Pills to Purge Melancholy*. The dance is an old-fashioned country dance (or *contredanse*) and is known in the United States as the "Virginia reel." Addison took the name for his Sir Roger de Coverly in the *Spectator*.

COVERLEY, SIR ROGER DE. A quaint and amiable country gentleman who makes repeated appearances in Addison's *Spectator*. The portrayal of Sir Roger and his friends, by its completeness, vitality, and literary deftness, and by the ingenious selection of incident and situation as vehicles for expressing character, had a marked effect upon the development of English fiction. The papers concerning Sir Roger have been many times collected and published and now are accepted as English classics. See ADDISON, JOSEPH.

COVERSED (kô-vêrst') **SINE**. See TRIGNOMETRY.

COVERTURE (OF. *coverture*, Fr. *couverture*, covering, from ML. *coopura*, from Lat. *coopere*, to cover, from *co-*, together + *operire*, to cover, from *operire*, Lith. *uzh-vernù*, I shut). Under the common law, the legal condition or status of a married woman. By that law an unmarried woman, whether spinster or widow, is a "complete juristic person," having the same standing before the law as a man. Upon marrying, however, i.e., coming under the protection of a man, her legal position is radically altered, and in many respects completely merged in that of her husband. This is especially true of her property rights. Her goods and chattels at once become his property. He acquires custody of her claims against others (*choses in action*) and may collect them for his own benefit. Her land passes under his control, and he acquires a joint seisin with her therein and may take the rents and profits to his own use during the continuance of the marriage relation. On the other hand, he becomes liable to pay her debts, those contracted before as well as those contracted after marriage, and under some circumstances he is responsible for her torts and crimes. The modern legislation which has almost restored to the married woman her lost personality will be described under the titles HUSBAND AND WIFE and MARRIED WOMAN. Consult the authorities referred to under these titles, and also those under COMMON LAW.

COVIELLO, kô'vyô'lô. The clown of old Italian popular comedy.

COVILHÃO, kô'vê-lyôun'. A town of Portugal, in the modern District of Castelo Branco (but formerly included in the Province of Beira), situated on the southeastern slope of the Serra da Estrella at an altitude of 2180 feet (Map: Portugal, B 2). It is commanded by a castle and is one of the chief centres of cloth manufacturing in Portugal. Pop., 1890, 17,562; 1900, 15,469.

COVILLE, FREDERICK VERNON (1867-). An American botanist, born at Preston, N. Y. He received his education at Cornell University and was instructor in botany there from 1887

to 1888. In the latter year he became connected with the United States Department of Agriculture, and after serving five years as assistant in botany, was made botanist and also curator of the United States National Herbarium. In 1899 he was elected president of the Biological Society of Washington. His publications include a monograph on the *Botany of the Death Valley Expedition* (1893), the author having taken part in the expedition during 1890-91. He also prepared a number of reports, including: *Botany of Yakutat Bay, Alaska* (1896); *Crimson Clover Hay Balls* (1896); *Experiments in Blueberry Culture* (1910); *The Agriculture Utilization of Acid Land* (1913).

COVINGTON, kô'vîng-ton. A city and the county seat of Newton Co., Ga., 41 miles east-southeast of Atlanta, on the Georgia and the Central of Georgia railroads (Map: Georgia, C 2). The city has a public library, and Emory College (Methodist) is situated 1 mile to the north. Covington is in a fertile cotton-growing region and has cotton and oil mills, marble works, and manufactories of ice and fertilizer. The water works and electric-light plant are owned by the municipality. Pop., 1890, 1823; 1900, 2062; 1910, 2697.

COVINGTON. A city and the county seat of Fountain Co., Ind., 72 miles west by north of Indianapolis, on the Cleveland, Cincinnati, Chicago, and St. Louis, and the Wabash railroads, and on the Wabash River (Map: Indiana, B 2). There is a canning factory, and the city has a Carnegie library and municipal water works and electric-light plant. Pop., 1900, 2213; 1910, 2069.

COVINGTON. A city and one of the county seats of Kenton Co., Ky., at the junction of the Ohio and Licking rivers, opposite Cincinnati, of which it is practically a suburb (Map: Kentucky, F 1). It is on the Louisville and Nashville and the Chesapeake and Ohio railroads, and electric railroads also connect it with the neighboring towns. Bridges to Cincinnati and to Newport, Ky., add to the facilities for communication, the great suspension bridge to the former city being a noteworthy specimen of engineering. (See CINCINNATI.) Covington occupies an area of about 5¼ square miles on a beautiful plain partly surrounded by hills, and resembles Cincinnati in its general arrangement. The city has many fine residences, a public library, city hall, race track, and a Federal building noteworthy as a specimen of modern Gothic, and among charitable institutions, a hospital for contagious diseases, Catholic and Protestant orphan asylums, and a home for aged women. Covington is an important centre of Roman Catholic influence, the cathedral, a type of flamboyant Gothic, being one of the finest ecclesiastical structures in the State. Connected with this denomination there are also a Benedictine priory, a convent, a hospital and founding asylum, Notre Dame Academy, and La Sallette Academy. The facilities for transportation, both by rail and by water, placing the city in communication with a wide territory possessing valuable natural advantages, have contributed to the city's commercial importance. Its industrial interests are also important, and include extensive pork-packing establishments, distilleries, breweries, steam-engine factories, tobacco factories, cotton factory, ironworks, and manufactories of vinegar, furniture, stoves, tinware, bricks, tile, pottery, rope, contractors' machinery,

metal signs, automobile trucks, X-ray machines, circus tents, pianos, cordage, etc. Covington has adopted the commission form of government. There are municipal water works, built in 1887, furnishing an abundant supply of water drawn from the Ohio River at a distance of about 13 miles above the city. Covington's annual budget approximates \$660,000, the main items of expense being \$108,000 for schools, \$111,000 for interest on debt, \$47,000 for police department, \$35,000 for the fire department, \$55,000 for street expenditures, and \$15,000 for public library fund. Settled in 1812 and laid out three years later, Covington was chartered as a city in 1834. Pop., 1860, 16,471; 1880, 29,720; 1890, 37,371; 1900, 42,938; 1910, 53,270.

COVINGTON. A city and the parish seat of St. Tammany Parish, La., 66 miles by rail north of New Orleans, with which it has steamboat connection on the Bogue Falaya River; on the New Orleans Great Northern and the Yazoo and Mississippi Valley railroads (Map: Louisiana, E 3). It contains St. Paul's College, St. Scholastica's Academy, a fine public park, and high school. There are lumber, turpentine, bottling, and canning interests. Pop., 1900, 1205; 1910, 2601.

COVINGTON. A city and the county seat of Tipton Co., Tenn., 37 miles northeast of Memphis, on the Illinois Central Railroad (Map: Tennessee, A 3). It is a shipping point for cotton and oil, and has flour and saw mills, cotton and cottonseed-oil mills, cotton compress, etc. The water works and electric light plant are owned by the city. Pop., 1900, 2787; 1910, 2900.

COVINGTON. A town and the county seat of Alleghany Co., Va., about 50 miles (direct) northwest of Lynchburg, on the Chesapeake and Ohio Railroad, and on the Jackson River (Map: Virginia, D 4). It has several manufacturing plants including a large pulp and paper mill, iron-furnace, tannery, foundry, ice, extract and fertilizer plants, and planing and flouring mills. The town contains a home for homeless boys and owns its water works. Pop., 1900, 2950; 1910, 4234.

COVODE, JOHN (1808-71). An American legislator, born in Westmoreland Co., Pa. He worked for several years on a farm, was apprenticed to a blacksmith, and afterward attained considerable wealth as a woolen manufacturer. He served for two terms in the Pennsylvania Legislature and was a member of Congress, first as an anti-Masonic Whig and then as a Republican, from 1855 to 1863, and again from 1867 to 1870. In politics he took a leading part as a supporter of Lincoln and as an opponent of Johnson, but is chiefly remembered for his connection as chairman with the special congressional committee appointed in 1860 to investigate the charges brought against President Buchanan in connection with the passage of the Lecompton Bill. See COVODE INVESTIGATION.

COVODE INVESTIGATION. An investigation (1860) by a congressional committee of five, headed by Covode of Pennsylvania, into the charge made by two anti-Lecompton Democrats that the administration had endeavored to persuade them corruptly to support the Lecompton Bill. (See LECOMPTON CONSTITUTION.) President Buchanan vigorously protested against the appointment of a committee for such a purpose, on the ground that it would detract from the

dignity and independence of the executive office, but his protests were unheeded, and in June the committee made its report, the Republican majority supporting the charge and the Democratic minority denouncing it. The committee, however, was considered to have brought forward sufficient evidence to prove Buchanan's favoritism and his questionable use of patronage. The report was printed in a bulky volume. For a defense of Buchanan, consult Curtis, *Life of Buchanan* (New York, 1883).

COW. See CATTLE; DAIRYING.

COW'AGE, COW'HAGE, or COW'TICH (from Hind. *Kawānch, Koānch*). Short, slender, brittle hairs, which grow on the outside of the pods of plants of the genus *Mucuna*, natives of the tropical parts of America and Asia. The genus belongs to the family Leguminosae and has a knotted, two-valved pod, divided by transverse partitions. The species, about 25 in number, are twining plants, shrubby or herbaceous, with leaves of three leaflets. That which yields most of the cowage brought to market is *Mucuna pruriens*, a native of the East Indies, with racemes of fine purple flowers, which have a disagreeable alliaceous smell, and pods about 4 inches long. *Mucuna urens*, the oxye bean of the West Indies, yields cowage of similar quality. The hairs readily stick in the skin and cause intolerable itching. Cowage is sometimes used in medicine, acting mechanically in killing and expelling worms, particularly the species of *Ascaris* (q.v.). That it does not act on the inner surface of the intestinal canal is supposed to be owing to the mucous secretion. It is generally administered in syrup or honey. Before the pods of cowage plants are ripe, they are used as a vegetable, like kidney beans, and are very palatable. *Mucuna utilis*, velvet bean, is usually considered specifically the same as *Mucuna pruriens*, but velvet-bean pods are without the stinging hair of the other. The velvet bean has lately attracted much attention as a forage crop. It is well adapted to Florida and the Gulf States, having about the same value as the better varieties of cowpeas. As a green manure and mulch crop for orchards, it is highly considered.

COW ANT. See HORSE ANT.

COWARD, EDWARD FALES (1862-). An American playwright, born in New York City and educated at Lyons Collegiate Institute and at Columbia College. During a long period of active interest in amateur dramatics he played more than 150 parts. For two years he was dramatic editor and critic of the *New York Evening Sun*, and for more than six years, of the *New York World*. He also wrote for *The Theatre*; adapted *The Belle's Stratagem*; collaborated on *The Lady from Chicago*, and *Around New York in 80 Minutes* (musical comedies); and wrote *Hearts Are Trumps*, a comedy, and *King Stephen: An Historical Drama in Seven Tableaux Completed from John Keats' Fragment* (1912).

COWBERRY. See CRANBERRY.

COWBIRD. A small North American blackbird (*Molothrus ater*), closely related to the redwing, remarkable for its parasitic habits, and frequenting in small flocks fields where cattle pasture, often alighting upon them to eat parasites, or clustering about their feet to snap up the insects disturbed by their movements; to this habit it owes its names, cow blackbird, cowpen bird or bunting, buffalo bird, etc. This

common species (see Plate of BLACKBIRDS) is about 8 inches long; the adult male is rich glossy black, with greenish reflections, except the head, which is chocolate brown, the female and young are simply brownish gray, paler beneath. The cowbird is found throughout the United States, from Texas northward nearly to Hudson Bay. In the north it is migratory, but south of the Ohio it is a permanent resident. It is to be seen in small bands frequenting fields and pastures, where its principal food is vegetable (mainly seeds of weeds), with insects caught upon the ground and about cattle. There are usually several more males than females in each band, for these birds do not pair, and the antics and spluttering and guttural squeaks with which the males try to attract the females are most queer and amusing. In the autumn they gather in large flocks and associate with other blackbirds. Other species are found in the southwestern United States, in Mexico and Central America, and several in various parts of South America.

The parasitism of the cowbirds is their most striking characteristic, their behavior resembling that of the European cuckoo. None, except one, takes a mate, or makes a nest, or incubates its eggs. Instead of this, when the breeding season (May and June) is at hand, the female ready to lay an egg quietly leaves the flock and stealthily seeks the home of some bird, from which the mother is temporarily absent, incubation not having begun. There she deposits her egg (see Colored Plate of EGGS of AMERICAN SONG BIRDS), to which she pays no more attention. It matters not whether the nest she visits has already its full supply of eggs, or even whether it already contains one or several eggs of her own species, she will sometimes throw out eggs of the owner to make room for her own. The egg of the cowbird usually hatches in less time than do the eggs of the bird on which it is imposed, whereupon the rightful eggs may be abandoned or thrown out, or, if some of them hatch, the young are speedily starved or smothered or elbowed out of the nest, while the foster parents devote themselves to the care of the greedy stranger. He remains in the nest until it is really outgrown, but even after he has left it he is cared for, for a time, by the birds that brought him up. But at last, when well able to fly, he seeks out others of his own kind, and the birds that have devoted themselves to him so assiduously have nothing to reward their pains. Over 100 species of birds are thus burdened with more or less frequency, but some will desert the nest rather than incubate the strange egg; others build a second story on the nest, leaving the cowbird's egg to perish below, while they raise their own brood in the superstructure.

The egg of the cowbird is a rather blunt oval, measuring, on the average, .84 by .65 of an inch, and is white or grayish, profusely speckled with browns, the general effect of which is indistinct and pale; it is not easily mistaken for any other bird's egg of its size. Several species of cowbirds inhabit Central and South America, and have similar habits, except in one instance, the bay-winged cowbird (*Molothrus badius*) of Argentina and Bolivia, which differs from the ordinary type in several ways, among others in having a low and pleasing song, which it delivers more or less all the year around. It does not abandon its eggs to the care of other nurses, but

forms conjugal ties and occasionally makes a nest of its own; more often, however, it seizes upon the nests of other birds and in their despoiled property lays its eggs and rears its own young. A circumstantial history of this interesting group and a discussion of bird parasitism may be found in Slater and Hudson; *Argentine Ornithology* (London, 1888-89), largely reprinted by Bendire, in "The Cowbirds," in *Report of the National Museum for 1893* (illustrated, Washington, 1895).

COWBOYS. 1. The name applied during the Revolutionary War to robbers, usually of cattle and sometimes of other property, who infested the roads east of the Hudson River between the British and American lines. They professed to be Tories. A similar band, professing to be Whigs, called "Skinners," plundered wayfarers at the same period and in the same places. See Cooper's romance *The Spy*.

2. The name given to the mounted herdsmen hired by the owners of cattle in the United States to look after their stock. In the great herding districts of the West, where cattle roam over vast areas without fences or roads and with only scattered and irregular places for water and shelter, the cowboys occupy an important place. It is their business to keep the cattle together, to guide them to pasture, to prevent their being mixed with other droves, to protect them from Indian and other thieves, to brand them at the proper seasons, and to drive them to the shipping point when they are "beef."

COW CREEK INDIANS. An Athapaskan tribe in Oregon and also a division of the Seminoles in Florida.

COWDRAY, OF MIDHURST, WEETMAN DICKINSON PEARSON, BARON (1856-). A British capitalist. He became president of the contracting firm of S. Pearson and Son, Ltd., and in this connection he superintended the construction of the Dover Harbor Works, the tunnels under the East River, New York, and the Blackwall Tunnel, London. In 1894 he was made a baronet and in 1910 a baron. He was a member of the House of Commons for Colchester from 1895 to 1910, when he took his seat in the House of Lords and also became high steward for Colchester. The Pearson syndicate acquired extensive oil concessions in Ecuador and in Mexico. Its interests in the latter country, which were obtained from the Porfirio Diaz government, covered an area of more than 500,000 acres and represented a capitalization of \$50,000,000 (Mexican currency; \$25,000,000 American). It is considered by many that the rival grant oil interests of Mexico, the Pearson syndicate and the Standard Oil Company represented by the Waters-Pierce Oil Company, had an important if not a leading part in the revolutions of that country. It is known that Francisco Madero, the leader of the successful revolt (1913) against the Diaz régime, was favorable to the interests of the Standard Oil Company, and, although Lord Cowdray denied the charge, it was asserted that the Pearson interests aided Huerta and Felix Diaz in the counter revolution against Madero. In November, 1913, Lord Cowdray formally requested the United States government to protect his oil properties in Mexico. See MEXICO, HISTORY.

COWELL, EDWARD BYLES (1826-1893). An English Sanskrit scholar. Born at Ipswich, he was educated at Oxford. He went to Calcutta in 1856, where he was professor of history in

the Presidency College and later (1858) principal of the Sanskrit College. He left India in 1864, and in 1867 he was made professor of Sanskrit in the University of Cambridge. His contributions to advancing the knowledge of India were made not only through his writings, but also through the inspiration he gave to his pupils, whose numbers were large. His association with Edward FitzGerald of Omar Khayyam fame is of interest in English literary history. Among Cowell's more important works may be mentioned: *The Prākṛit Grammar of Vararuci* (1854, 2d ed., 1888); *The Black Yajur Veda*, books i, ii, edited in collaboration with Roer (1858-64); the *Kusumāñjali* (1864); *The Hindu Law* (1871); *The Hindu Digest* (1873); *The Aphorisms of Sāṅkhya* (1878); *The Sarvadarśana-Saṃgraha*, translated conjointly with Gough (1882); *The Harsa-Carita of Bāna Bhaṭṭa* (1897); and *The Buddha-Carita of Aśvaghosa*, in Sanskrit and English (1892-94). At the time of his death he was editing the translations of *The Jātaka*; or, *Stories of the Buddha's Former Births* (7 vols., 1895-1913), of which the sixth volume, published in 1907, was translated by him in conjunction with Rouse. His *Life and Letters* were edited by George Cowell, his kinsman (Oxford, 1904).

COWEN, kou'en, SIR FREDERIC HYMEN (1852-). An English musician, born at Kingston, Jamaica. His parents took him to London when four years old, and he became a pupil of Benedict and Goss in that city. In 1865 he went to Leipzig, where he studied under Hauptmann, Moscheles, Reinecke, Richter, and Plaiddy. In 1882 he became director of the Edinburgh Academy of Music, and in 1887 succeeded Sir Arthur Sullivan as conductor of the London Philharmonic. He was musical director of the Melbourne Centennial Exhibition (1888-89), and in 1896 was chosen conductor of the Liverpool Philharmonic and of the Manchester Concerts. In 1900-10 he was conductor of the Scottish Orchestra at Glasgow. In 1903, 1906, 1909, and 1912 he directed the Crystal Palace Handel festivals. He was knighted in 1911. His compositions include the operas *Pauline* (1876), *Thorgrim* (1890), *Signa* (1893), and *Harold, or the Norman Conquest* (1895); *A Phantasy of Life and Love* (1901); *Coronation Ode* (1902); *Indian Rhapsody* (1903), four oratorios, *The Deluge* (1878), *St. Urusla* (1881), *Ruth* (1887), *The Veil* (1910); and a number of cantatas, including *The Corsair* (1876) and *John Gilpin* (1904), six symphonies; four overtures, three suites for orchestra; a piano concerto; a string quartet; a trio; and over 300 songs. He published his memoirs under the title *My Art and my Friends* (London, 1913).

COWES, kouz. A seaport and watering place on the north coast of the Isle of Wight 12 miles southeast of Southampton (Map: England, E 6). It consists of East and West Cowes, lying on opposite sides of the Medina. West Cowes is the headquarters of the Royal Yacht Squadron, located since 1856 in an old castle once used as a fort. Over 2000 of the pick of English sailors are employed as crews of the numerous yachts of the members. Several regattas are held annually, the one held in the month of August attracting crowds of visitors. Near East Cowes are several fine countryseats, Whippingham Church, East Cowes Castle, and Osborne House, the former royal

seaside residence of Queen Victoria, now, with its grounds, a public memorial and park, donated to the nation by Edward VII. Cowes is famous for its yacht-building yards and engineering works, and has a considerable trade as the port of the island. Pop., 1901, 11,834; 1911, 14,294.

COW/FISH (so named from the shape of its head). 1. A trunkfish (*Lactophrys tricornis*) of the tropical Atlantic, varicolored in bright hues, and also called "cuckold." (See Cow Pilot and Plate of PLECTOGNATH FISHES.) 2. A grampus (q.v.). 3. A cow shark (q.v.).

COW/GATE, THE. A well-known street in the Old Town, Edinburgh. It was once a fashionable place of residence, but is now given over to the poorer classes.

COW/HAGE. See COWAGE.

COW/HEEN. The local name in eastern Canada of the long-tailed duck, or old squaw (q.v.) *Harelda*, or *Clangula, hyemalis*).

COWICHAN. See SALISHAN STOCK.

COWIE, kou'i, FREDERICK WILLIAM (1863-). A Canadian civil engineer. He was born in Haldimand Co., Ontario, and graduated at McGill University in 1886. For three years (until 1889) he was a member of the engineering staff of the Montreal Harbor Commission, organized to increase the capacity of Montreal as a great shipping port, and in 1907 he was appointed chief superintending engineer of this commission. Meanwhile, in 1889-97, he had been chief assistant engineer of the Department of Public Works, Ottawa, and in charge of the St. Lawrence channel between Quebec and Montreal; chief superintending engineer of the channel from 1897 to 1907, and in 1892-97 engaged in making surveys and reports on most of the harbors of the Great Lakes. When a Royal Commission was appointed in 1903 to inquire into the St. Lawrence route and winter navigation, Cowie became its consulting engineer. He invented a contrivance for facilitating the loading and discharging of ships' cargoes; and he published: *Report on British and Continental Ports, with a View to the Development of the Port of Montreal and Canadian Transportation*, with G. W. Stephens (1908); *Winter Navigation* (1908), designed to show that the Hudson Bay route is not practicable; and *Navigation on the St. Lawrence River* (1910).

COW/TITCH. See COWAGE.

COWL (AS. *cūle*, *cuhle*, *cugle*, Icel. *kuf*, OHG. *cugela*, Ger. *Kugel*, *Kogel*, OF. *coule*, It. *cuccolla*, *cocolla*, from Lat. *cucullus*, cap). A hood, varying in length in different ages, generally attached to a loose cloak and worn on the head. It was common in England in the Middle Ages, but has come to be used chiefly by monks or members of some religious order, such as the Benedictines and Franciscans. See COSTUME, ECCLESIASTICAL.

COWLES, kōlz, HENRY CHANDLER (1869-). An American botanist, born at Kensington, Conn. He was educated at Oberlin College and at the University of Chicago, and in 1894-95 was professor of natural sciences at Gates College (Neb.) and a special field assistant of the United States Geological Survey. At the University of Chicago he was instructor in botany in 1902-07, assistant professor in 1907-11, and in 1911 became associate professor. He contributed to the first edition of the NEW INTERNATIONAL ENCYCLOPEDIA. His publications in-

clude: *Vegetation of Sand Dunes of Lake Michigan* (1899); *Text-Book of Plant Ecology* (1911); *Plant Societies of Chicago and Vicinity* (1913).

COWLES, kôlz, WILLIAM LYMAN (1856-). An American scholar and educator, born at Belchertown, Mass. He graduated at Amherst College in 1878, was instructor in Latin there from 1880 to 1883, studied at the universities of Berlin, Göttingen, and Leipzig in 1883-84, and became associate professor of Latin at Amherst in 1884. In 1894 he was appointed a professor. From 1886 to 1894 he was lecturer in Latin literature at Smith College, where he was also acting professor of Latin in 1899-1900. In the study of classical archaeology he traveled extensively throughout the Italian peninsula. His publications include, besides articles for periodicals, an annotated edition of the *Adelphæ* of Terence (1896); *Selections from Catullus* (1900); and *Selections from Ennius, Catullus, Tibullus, and Propertius, with Parallel Passages from Horace, Ovid, and Martial* (1909).

COWLES, kôlz, WILLIAM SHEFFIELD (1846-). An American naval officer, born at Farmington, Conn. After graduating from the United States Naval Academy in 1867, he was promoted through the various grades to be captain in 1902 and rear admiral in 1908. Besides serving at the Mediterranean, North Atlantic, Pacific, and Asiatic stations he was on duty at the Isthmus of Panama in 1884 to guard the property of American citizens. He was naval attaché at London in 1893-97, assistant to the Bureau of Navigation and aid to the President in 1899, commanded the Missouri in 1903-05, and became chief of the Bureau of Equipment and a member of the Board of Construction in 1906. He was in Mexican waters on the cruiser *Pittsburgh* in 1913-14, looking after American interests during the Mexican troubles.

COWLEY, kou'li, ABRAHAM (1618-67). An English poet and essayist. He was born in London and was educated at Westminster School and Trinity College, Cambridge. According to his own statement, he received his poetical inspiration from Spenser's *Fæerie Queene*, a copy of which lay in his mother's parlor. A volume of poems, entitled *Poetical Blossoms*, was published by him at the age of 15, and one of the pieces contained therein was written when he was only 10 years old. At Cambridge he obtained distinction for the elegance of his translations; and while there he composed the greater part of the *Davideis*, an epic in four books on the life of David—a work which he never completed. He was attached to the court party, and, in consequence, was ejected from his college in 1643, after he had taken his degree of M.A. In 1646 he followed the Queen to Paris, where he remained 10 years, and on his return to England, being under suspicion, he was seized and bound in heavy securities for his future behavior. In the same year (1656) he published an important collection of his poems, including his elegies on Harvey and Crashaw, Pindaric odes, *The Mistress*, and the *Davideis*. He now studied medicine, receiving his degree the following year. After the Restoration he obtained a lease of the Queen's Lands at Chertsey in Surrey, whither he retired in 1665. He was buried in Westminster Abbey, near Chaucer and Spenser. Cowley belongs to what Dr. Johnson called the "metaphysical" school of poets.

He abounds in subtleties of thought and expression, enjoyed in his own day, but long since out of fashion. To us his fanciful love poems, displaying no emotion, seem very strange. Of his longer poems, the elegies cited above are the best. His most natural verse is scattered through his essays, which are graceful and beautiful. Convenient modern editions are: *Complete Works* (ed. Grosart, London, 1880-81); *Poems* (ed. A. R. Waller, Cambridge, 1905); *Essays, Plays, etc.* (ed. A. R. Waller, ib., 1906). Johnson's *Lives of the Poets* may be consulted.

COWLEY, ARTHUR ERNEST (1861-). An English Hebrew scholar. He was educated at St. Paul's School and at Trinity College, Oxford. He was assistant master at Sherborne School in 1885-89, became fellow of Magdalen College, and, in 1906, sublibrarian of the Bodleian Library. He wrote for reviews and reference works on Hebrew language and literature and cognate topics, and published: *The Original Hebrew of a Portion of Ecclesiasticus* (1897, with Neubauer); an English version of Gesenius' *Hebrew Grammar* (1898; 2d ed., 1910); *Aramaic Papyri* (1906, with Sayce); the second volume (1906) of a *Catalogue of Hebrew MSS. in the Bodleian Library*; *The Samaritan Liturgy* (1909).

COWLEY, HANNAH (1743-1809). An English poet and playwright. She was born at Tiverton, Devonshire, where her father, Philip Parkhouse, was a bookseller. It was not until several years after her marriage to Cowley, a captain in the East Indian service, that she began to write plays. Her first production, *The Runaways*, she wrote in less than a fortnight. It was presented by Garrick at the Drury Lane in 1776, and was instantly successful. Her other comedies include the following, played at Drury Lane, *Who's the Dupe?* (1779), and at Covent Garden: *The Belle's Stratagem*, which is still popular (1780, pub., 1782); *Which Is the Man?* (1782); *More Ways than One* (1783); and *A Bold Stroke for a Husband* (1783).

COWLEY, HENRY RICHARD CHARLES WELLESLEY, first EARL (1804-84). An English diplomatist, nephew of the Duke of Wellington and of Marquis Wellesley. He was an attaché at Vienna in 1824 and was promoted to be Secretary to the Legation at Stuttgart and to the Embassy at Constantinople. He became Minister Plenipotentiary to Switzerland (1848) and to the Germanic Confederation (1851), and in 1852 succeeded the Marquis of Normanby as Ambassador at Paris, and he held the appointment, whether his party was in or out of office, through a particularly trying period, till 1867, when he resigned. With the Earl of Clarendon he represented Great Britain at the Paris Congress of 1856. He was created Viscount Dangan and Earl Cowley in 1857.

COWLITZ. See SALISHAN STOCK.

COW PARSNIP (*Heracleum*). A genus of plants of the family Umbellifere. One species, *Heracleum spondylium*, is a native of Great Britain, the common cow parsnip, or hog weed, called *kesh* in Scotland; a common and rank weed, with coarsely hairy leaves, and stem about 3 to 5 feet high. It is gathered in some parts of England for fattening hogs and is said to afford wholesome food for cattle. Some Siberian species are much larger and have been recommended for cultivation on account of the great quantity of herbage which they yield very early in the season, particularly *Heracleum*

panacea, which sometimes attains a height of 10 feet, and whose root leaves are 3 to 5 feet long. *Heracleum lanatum*, a tall, stout, wooly perennial with grooved stems and large compound leaves, is known as cow parsnip in the United States and Canada, being quite widely distributed. In Alaska the leafstalks are peeled and eaten. It is there sometimes called "wild celery." The stalks when drying exude a sweet substance, and they are said to be fermented and a liquor distilled from them in Siberia.

COWPEA (*Vigna sinensis*). A leguminous plant closely related to the asparagus bean (*V. sesquipedalis*) and the catjang (*V. catjang*), the other cultivated species of the genus. All readily hybridize, and intermediate forms exist. The cowpea, by far the most important of the group, was cultivated in prehistoric times in India, China, and the Malayan region, and was known in southern Europe at the beginning of the Christian era. It is now widely distributed in the torrid and temperate zones. It was introduced into the United States early in the eighteenth century. At present it is a very common forage crop in the South, and is also grown to some extent in the Northern States. The tendency of the cowpea to vary in habit of growth, color of leaf, stem, and pod, and in the shape and color of the seed, gives rise to numerous varieties. These include prostrate, procumbent, bushy, and tall and erect forms. (For illustration, see Plate of LEGUMES.) In addition to being a very important forage plant, it is especially valuable as a soil renovator, having the power of gathering the free nitrogen of the air in common with the clover (q.v.). Consult *United States Department of Agriculture, Farmers' Bulletin 318*, and *Bureau of Plant Industry, Bulletin 229*.

Food and Feeding Value.—The green fodder has the following average percentage composition: water, 83.6; protein, 2.4; fat, 0.4; nitrogen-free extract, 7.1; crude fibre, 4.8; and ash, 1.7; the cowpea hay the following: water, 10.7; protein, 16.6; fat, 2.9; nitrogen-free extract, 42.2; crude fibre, 20.1, and ash, 7.5. The silage resembles the green crop in composition, containing some 80 per cent of water, 3 per cent of protein, and 8 per cent of nitrogen-free extract, in addition to small amounts of the other constituents. Young pigs thrive on the cowpea forage and well-filled pods, and it is a custom to turn them into the fields planted for green manuring about the time the first pods are ripening. An acre will pasture 15 or 20 pigs for several weeks. The manure more than compensates for the vines eaten. Turkeys and chickens eat the ripe peas and do well on them. Cattle, sheep, and horses are sometimes pastured on cowpea, but the safest and most economical method is to cut or pull the vines and feed them partially wilted. Cattle and sheep are liable to bloat if they are allowed to eat too ravenously of cowpea vines, as is the case with other succulent crops. Cowpea hay compares favorably with other leguminous hays in digestibility; 59 per cent of the total dry matter, 65 per cent of the protein, 71 per cent of the nitrogen-free extract, and 42 per cent of the crude fibre being digested on an average. Like other leguminous seeds, the cowpea seed is rich in protein. It contains on an average: water, 14.8; protein, 20.8; fat, 1.4; nitrogen-free extract, 55.7; crude fibre, 4.1; and ash, 3.2 per cent. Cowpeas, whole or ground, are

sometimes fed to farm animals, but it is usual to harvest only enough for seed.

As a food for man, some varieties of cowpeas are much relished. The shelled peas are cooked in the same way as shell beans or garden peas. The whole pod when young is also eaten like string beans. For winter use the dry cowpeas are cooked like other dry beans and have a very agreeable flavor. In composition and digestibility cowpeas closely resemble navy beans and are an important foodstuff. The plant is injured by a weevil (*Bruchis chinensis*), to be recognized by two elevated, ivorylike lobes on the thorax; and by the September brood of the bollworm (q.v.).

COWPEN. A town in Northumberland, England, on the south shore of the Blyth Estuary, 6½ miles east-southeast of Morpeth. The town owns its markets and water works. Its industries are coal mining, glass manufacture, and shipbuilding. Pop., 1891, 13,000; 1901, 17,879; 1911, 21,295.

COWPENS. A town in Spartanburg Co., S. C. (pop., 1909, 1101), noted chiefly for the battle which took place there on Jan. 17, 1781, between 1100 British under Colonel Tarleton and about 1000 Americans under General Morgan. This engagement, sometimes called the "Bennington of the South," for its decisiveness, was won for the Americans, partly by the rashness of the impetuous Tarleton, but especially by the daring position assumed by the American commander and the tactical skill he displayed in defending it. Losses—British, 800 killed, wounded, and captured, American, 12 killed, 60 wounded.

COWPER, kōō'pēr or kou'pēr, FRANCIS THOMAS DE GREY, EARL (1834-1905). An English statesman. He was educated at Christ Church, Oxford, and succeeded to the hereditary title in 1856. His grandmother's death (1869) and his mother's (1880) greatly enlarged his estates. He was a Liberal in politics and would have entered Parliament as a career, had he not so early succeeded his father. He was Lord Lieutenant of Ireland, with W. E. Forster as Chief Secretary, from 1880 to 1882, when he was succeeded by Lord Spencer, and proved an able administrator during the critical period of the Land League. He opposed Gladstone's Home Rule policy. He was one of the founders of the Unionist party and presided as chairman at the so-called "Opera House Meeting" to oppose the first Home Rule Bill. Upon the installation of Lord Salisbury he was appointed chairman of the commission in the Irish Land Act of October, 1881. He was also a member of the Gresham University Commission of 1892.

COWPER, FRANK CADOGAN (1877-). An English genre and historical painter. He was born at Wicken (Northamptonshire) and studied at St. John's Wood School, the Royal Academy, and under Abbey and Sargent. He began as a portrait painter, then turned to imaginative genre in the English Pre-Raphaelite style, which quickly brought him into prominence. Among the best known of his paintings are: "The Churchyard Scene from Hamlet" (1902, National Gallery, Brisbane); "St. Agnes in Prison" (1904, National Gallery, London); "The Devil and the Nuns" (1907); "Venetian Ladies Listening to the Serenade" (1909). His water colors, which are usually illustrations of fairy tales and fanciful stories, are brilliant in color and charming in conception. Good ex-

amples are: "Molly, Duchess of Nona" (1905); "Patient Griselda" (1807); "Rapunzel Sings from the Tower" (1908). In 1910-12 he painted, in a cleverly archaic style, a series of mural decorations in the east corridor of the London Houses of Parliament. He was elected associate of the Royal Academy and a member of the Water Color Society.

COWPER, WILLIAM, EARL (c.1664-1723). An English judge, the first Lord Chancellor of Great Britain. He was called to the bar in 1688, joined the Prince of Orange as soon as he landed, and was made King's Counsel in 1694. In the following year he entered Parliament, where he became known as an excellent debater, and was made Lord Keeper of the Great Seal. In 1706 he was one of the commissioners to negotiate the union of Scotland with England and was made a peer. In 1707 he was made Lord Chancellor, in 1716 Lord High Steward, and in 1718 became an earl. He was a great orator, but neither a logical nor well-trained lawyer. Consult his *Private Diary*, edited (1833) by Hawtrey, covering 1705-14; and Lady Cowper's *Diary* for the next two years, edited (1864) by Spencer Cowper.

COWPER, WILLIAM (1666-1709). An English surgeon, born at Petersfield in Sussex. He was made a barber surgeon in 1691 and became known not only as a skillful practitioner, but also as a thorough anatomist and pathologist. Among his permanent contributions to anatomical science the discovery of the now so-called Cowper's glands (q.v.) will preserve his name. In 1696 he was made a fellow of the Royal Society. His published works include the following: *Myotonia Reformata* (1694; 2d ed., rev. by Jurin, Pemberton, and Tanner, 1724); *The Anatomy of Human Bodies* (1698; 2d ed., 1737), the best English work on anatomy up to that date; *Glandularum Quorundam nuper Detectarum Ductuumque eorum Excretionum Descriptio cum Figuris* (1702).

COWPER, KŌŏ'pĕr or kou'pĕr, WILLIAM (1731-1800). An English poet, son of John Cowper, D.D. He was born at his father's rectory at Great Berkhamstead, Hertfordshire. Losing his mother when he was only six years old, Cowper, who was naturally a delicate and sensitive child, became, as a boy, very deeply melancholy and depressed. Just after his mother's death he was placed in the school of a Dr. Pitman, in Market Street, Hertfordshire. Removed because of cruel treatment by another boy, he was sent, at the age of 10, to Westminster School. The period he spent here was very miserable and laid the foundation of that settled gloom which oppressed him till death. It is to the remembrance of these wretched days that we are indebted for the fierce invective that burns in the *Tirocinium, or a Review of Schools* (1784). Shortly after leaving Westminster Cowper was articled to a Mr. Chapman, an attorney in London. Upon leaving Chapman's office he entered the Middle Temple. In 1754 he was called to the bar, but never practiced. His father died in 1756 and left him a small patrimony. In 1759 he removed to the Inner Temple, but his hatred of the law was so great that he seldom opened a book that bore on his profession. Yet he was industrious enough; he scribbled poetry, read Homer, and, in conjunction with his brother, translated some of the books of Voltaire's *Henriade*. In 1763 his cousin Major Cowper offered him the office of

clerk of the journals of the House of Lords, which he accepted, but having to undergo an examination at the bar of the House, he was seized with nervousness and could not appear. He even attempted suicide, but fortunately failed for want of courage. In December, 1763, he was removed to the private asylum of Dr. Cotton at St. Albans, a prey to the deepest remorse. After his removal from St. Albans (1765) he went to reside in the town of Huntingdon. Here he met Mrs. Unwin—the Mary of his poems—an acquaintance which ripened into the deepest friendship and continued till death. After a few months in lodgings he resided with the Unwins and enjoyed much tranquil happiness under that religious roof. Soon after the death of Mr. Unwin (1767) Mrs. Unwin and Cowper removed to Olney in Buckinghamshire. Here Cowper's malady returned. At this time he was engaged to marry Mrs. Unwin. She carefully tended him through his long and slow recovery. He found amusement in gardening, writing playful poems, and in building the famous summer house. Mrs. Unwin also suggested, as a subject suited to his genius, *The Progress of Error*. During the winter of 1780-81 he wrote *Truth, Table Talk, The Progress of Error, and Expostulation*, published in 1782. In 1781 Cowper made the acquaintance of Lady Austen, who suggested to him *The Task*, urged him to translate Homer, and—that the world is perhaps still more grateful for—she related to him the history of John Gilpin. *The Task* was begun in the summer of 1783 and published in 1785. Its success was great, and Cowper began to be considered the first poet of his day. In 1784 he began the translation of Homer, which appeared in 1791. It was received with great applause. Though Cowper wrote after this the beautiful and tender poem *To Mary*, his powers rapidly declined. He died at East Dereham, Norfolk. The centenary of his death was appropriately observed at Olney. Cowper's poetry is eminently healthy, natural, and unaffected. He and Burns brought back nature to English poetry. Besides being a poet, he was perhaps the most delightful letter writer in the English language. Nothing can surpass the charm of his epistles—full of humor, gentle sarcasm, anecdote, acute remark, and a tender shadow of melancholy thrown over and toning down the whole. See Southey, *Life and Letters*, etc. (15 vols., London, 1834-37, and reprinted in Bohn Library); *Poems of William Cowper* (1905, ed. J. C. Bailey); the Globe Edition of *Poetical Works*, ed. Benham (London, 1870); the Aldine Edition, by Bruce (ib., 1896); *The Unpublished and Uncollected Poems*, ed. Wright (ib., 1900); *Correspondence*, id. (New York, 1904); J. Neave, *A Concordance to the Poetic Works of William Cowper* (1887); S. A. Brooke, *Theology in the English Poets* (New York, 1910); and the lives by Smith (London, 1880) and by Wright (ib., 1892).

COWPER'S GLANDS (discovered by the English anatomist William Cowper). Two small yellow glands, which are situated beneath the anterior portion of the membranous urethra in the male. The glands are of the racemose variety (see GLANDS), each one being made up of a number of small lobes, which are again subdivided into lobules. The acini are lined with columnar epithelium. The gland secretes mucus, which is carried by a small duct, nearly an inch in length, to the posterior part of the

bulbous urethra. These glands diminish in size as age advances. The vulvovaginal glands, or glands of Bartholin of the female, are the analogues of Cowper's glands.

COW-PILOT. A small fish (*Pomacentrus saxatilis*), so called in Bermuda because it is believed always to accompany the cowfish (*Ostracium*). It is one of the demoiselles and is also called "mojarra."

COWPLANT. See GYMNEMA.

COWPOX. *Variola vaccina*, or "cowpox," as it is more commonly known, is a contagious disease of cattle characterized by an elevation of temperature, a shrinkage in milk production, and characteristic pustular eruptions, especially upon the teats and udders of dairy cows. The disease, which is benign in its course, is quite common in the United States, especially in the Eastern States. The cowpox virus, which appears to be ultramicroscopic, is usually transmitted from one animal to another by the hands of milkers, by calves, or by direct contact. In about a week after a cow becomes infected small pimples appear on the skin, which at first contain a watery fluid and later turn to pus. After the pustule is broken a thick dark scab forms, which later comes off, leaving a small pock mark.

Cowpox can be transmitted to man by direct inoculation as by sores on the hands, the fluid from the pustules being used to vaccinate persons against smallpox.

Treatment consists in the application of softening and disinfecting agents, such as carbolized vaseline and zinc oxide ointment. In more persistent cases a milking tube may be used in order to prevent opening of the pustules during milking.

Milk from affected cows should not be used for food, since it may become contaminated from the pustules and ulcers on the teats and in the sinuses of the udder, and produce infection by the alimentary canal of young children if it is consumed in a raw state.

Consult HUTYRA and MAREK, *Pathology and Therapeutics of Diseases of Domestic Animals*, vol. 1, and E. W. HOARE, *A System of Veterinary Medicine*, vol. 1. See also VACCINATION; SMALLPOX.

COWRY. (Hind. *kauri*, Beng. *kari*, from Skt. *kapardika*, shell). A gastropod mollusk of the family Cypræidae, whose shells are shaped somewhat like coffee beans, richly enameled and often beautifully marked. They are most abundant and attain their largest size in the seas of warm

as broad; is found on the Indian coasts, and in particular abundance on those of the Maldivé Islands, and has been one of their principal exports. In Bengal 3200 cowries were reckoned (in 1900) equal to a rupee, so that a cowry was then about equal in value to $\frac{1}{160}$ of a cent. Yet cowries to the value of 200,000 rupees are said to have been at one time imported annually into Bengal. Many tons of cowries are annually used in trade with west-central Africa, but their circulation is fast disappearing. Consult STEARNS, "Ethno-conchology: A Study of Primitive Money," in *Smithsonian Reports for 1897*, part ii (Washington, 1899). See SHELL MONEY; also COLORED PLATE of MARINE GASTROPODS with the article GASTROPODA.

COW SHARK. A large shark of the tropical family Hexanchidae. See Plate of LAMPREYS AND DOGFISH.

COWSLIP (AS. *cūslippe*, *cūslope*, from *cū*, cow + *slyppe*, *sloppe*, sloppy droppings, from *slūpan*, to dissolve, Eng. *slop*, alluding to the pastures where it is usually found; according to a euphemistic popular etymology *cow's-tip*) (*Primula officinalis* or *Primula vulgaris*). A common native of pastures in Europe; a delicate and modest little flower, a universal favorite, both for its beauty and its fragrance. (For illustration, see Plate of CRANBERRY, ETC.) The flowers have sedative properties and are sometimes used as an anodyne and antispasmodic. They are fermented with sugar to make cowslip wine, an agreeable and favorite soporific domestic medicine. The name "American cowslip," or "shooting star," is given to *Dodecatheon meadia*, a perennial plant, also of the family Primulaceæ, a native of North America, with a stalk about 8 inches high, bearing an umbel of gracefully pendant lilac, rose-color, or white flowers, the petals reflexed over the calyx, the stamens and pistil long, and the anthers of a golden color. It is very ornamental in the flower border, resembling a cyclamen. There are a dozen or more additional species and numerous varieties in the United States. See PRIMULA.

COWTREE. See GALACTODENDRON

COX, DAVID (1783-1859). An English painter in water colors and oils, the greatest English water-colorist. He was born at Deritend, near Birmingham, April 29, 1783, the son of a blacksmith. He studied drawing under Joseph Barber of Birmingham, and water color under John Varley in London. He was at first a scene painter in theatres, and for a long time supported himself by teaching drawing and selling water-color sketches, until at length there came patronage sufficient for his moderate desires. In 1805 he traveled in Wales, the scenery of which from this time became the favorite subject of his paintings. In 1813 he was made a member of the Society of Painters and Water-Colorists, and in 1814 he published his *Treatise on Landscape Painting and Effect in Water Colors*. He did not begin the study of oil painting until his fifty-sixth year, under Müller in London, but he attained great proficiency. Indeed, there is some reason to believe that had he practiced it from the beginning he might have equaled Constable. In 1841 he retired to Harbourn, near Birmingham, where he resided until his death on June 7, 1859. Although his true greatness was never recognized during his lifetime, Cox is certainly the most important of the successors of Constable. His work



A LIVING COWRY.

The animal is shown in the attitude of creeping (towards the left). The mantle is, however, withdrawn somewhat, revealing the normally clothed and protected shell. The short siphons and long tentacles appear, the last bearing the eyes, one of which appears as a black dot.

climates. The money cowry (*Cypræa moneta*) has long been in general use as a substitute for coin in many parts of Asia and Africa. It is yellow or white, about an inch long and nearly

is bold and aims at a general effect, disregarding small and conflicting details. His colors are those of nature, pure, fresh, and rich, and he handles light with consummate skill. His treatment of atmosphere and atmospheric mood is of the highest order. His small productions are usually better than the larger. He is the great painter of Welsh scenery, of which he was particularly fond. The British Museum and the South Kensington Museum possess some of his water colors and drawings, but the best of his work is in the Birmingham Art Gallery and in private possession. Several general exhibitions of his work have been held, the best of which was that of Manchester in 1887. Among his best water colors are the "Hay Field" (1843), "Bolton Abbey" (1847), and the "Welsh Funeral" (1850); among his oils, the "Vale of Clwyd" and "Peace and War." His son DAVID COX, the younger (1809-85), was also a water-colorist of repute, but not of the same ability as his father. Consult: Hall, *Biography of David Cox* (London, 1881); Solly, *Memoir of David Cox* (ib., 1875); Baldry, in *Masters of English Landscape Painting*, ed. by Charles Holmes (New York, 1903).

COX, GEORGE ALBERTUS (1840-1914). A Canadian capitalist and financier. He was born at Colborne, Ontario, and was educated at the Colborne grammar school. In early life he became an employee of the Montreal Telegraph Company, but removed to Peterboro in 1858, where he entered municipal life and lived for thirty years. He was mayor during seven terms. He engaged in many and various business enterprises with much success and rapidly amassed a considerable fortune, which was greatly increased after his removal to Toronto in 1888. In 1890-1907 he was president of the Canadian Bank of Commerce. He was also president of the Canada Life Assurance Company, and either president of, or a prominent director in, a large number of financial, manufacturing, and industrial concerns. In 1872 he was an unsuccessful Liberal candidate for the Ontario Legislature, and in 1887 he was again an unsuccessful Liberal candidate for the House of Commons. In 1896 he was appointed to the Senate.

COX, SIR GEORGE WILLIAM (1827-1902). A British divine and author. He was born at Benares, India, but was taken to England when eight years old. He studied at Rugby and Oxford, took orders in 1850, was appointed curate of Salcombe Regis, near Sidmouth, and later was rector of Scrayingham, York, from 1881 to 1897. He was a leading exponent of the sun-myth theory in comparative mythology, and published. *Poems. Legendary and Historical* (1850), with E. A. Freeman; *Life of St. Boniface* (1853); *Tales of Ancient Greece* (1868). *Latin and Teutonic Christianity* (1870). *Mythology of the Aryan Nations* (1870); *History of Greece* (1874); *The Crusades* (1874); *The Athenian Empire* (1876); *British Rule in India* (1881); *Lives of Greek Statesmen* (1885-86); *Life of Bishop Colenso* (1888); *The Church of England and the Teaching of Bishop Colenso* (1888). In 1891 he was chosen Bishop of Natal by the friends of Bishop Colenso (q.v.), but the archbishops and bishops of England refused him consecration.

COX, HAROLD (1859-). A British editor and economist, educated at Jesus College, Cambridge. He lectured on political economy for

the Cambridge University Extension Society, made special investigation of farm-labor conditions in Kent and Surrey, and taught mathematics for two years in the Mohammedan College at Aligarh, India. After his return to England in 1887 he studied for the bar, but eventually gave up law for journalism as a profession. He was secretary of the Cobden Club (1899-1904), a member of Parliament (1906-09), alderman in the London County Council (1910-12), and published *Land Nationalization* (1892); *American Progress and British Commerce* (1902), and pamphlets on free trade and economics. In 1912 he became editor of the *Edinburgh Review*.

COX, ISAAC JOSLIN (1873-). An American professor of history, born at West Creek, Ocean Co., N. Y., and educated at Dartmouth College and at the universities of Texas, Chicago, Wisconsin, and Pennsylvania. Between 1896 and 1906 he was instructor and vice principal at San Antonio (Tex.) Academy and instructor in history at the University of Cincinnati, where he was afterward assistant professor. In 1911-12 he was Shaw lecturer at Johns Hopkins University. Besides writing articles for the first edition (1903) of the NEW INTERNATIONAL ENCYCLOPEDIA, he published: *The Journeys of La Salle and his Companions* (2 vols., 1905); *The Early Exploration of Louisiana* (1906); *The Indian as a Diplomatic Factor in the History of the Old Northwest* (1910).

COX, JACOB DOLSON (1828-1900). An American soldier, politician, educator, and military historian. He was born in Montreal, Canada, was taken by his parents to New York City in 1829, graduated at Oberlin College in 1851, taught school at Warren, Ohio, in 1852, and there in the following year began the practice of law. From 1859 to 1861 he was a member of the State Senate, and in April, 1861, upon the outbreak of the Civil War, was appointed brigadier general of Ohio volunteers. He took an important part in the Kanawha Valley campaign under McClellan in the summer of 1861; commanded the Ninth Corps of the Army of the Potomac in the battles of South Mountain and Antietam in 1862; was promoted major general of volunteers, Oct. 6, 1862; commanded the Federal forces in West Virginia in the winter of 1862-63 and the military district of Ohio from April to December, 1863; was occasionally commander of the Twenty-third Army Corps during General Sherman's Atlanta campaign; was re-commissioned major general of volunteers in December, 1864, having been reduced from this rank in April, 1863, on account of the number of appointments being in excess of those provided for by law, and early in 1865 was sent to North Carolina to open communications with General Sherman, with whom he effected a junction at Goldsboro soon afterward. In 1866 he resigned from the service. After the close of the war he served as Governor of Ohio in 1866 and 1867, attracting attention by his opposition to the policy of his party (the Republican) on the question of negro suffrage, and from March, 1869, until December, 1870, when he resigned, was Secretary of the Interior in the cabinet of President Grant. He then again practiced law, was president of the Wabash Railroad for several years, was a Republican member of Congress from 1877 to 1879, was dean of the Cincinnati Law School from 1881 to 1897, and from 1895 to 1899 was

also president of the University of Cincinnati. He wrote many magazine articles, mostly on subjects connected with the Civil War and with microscopy, in which he attained considerable eminence, and published the following works on the military history of the Civil War: *Atlanta* (1882); *The March to the Sea: Franklin and Nashville* (1882); *The Second Battle of Bull Run as Connected with the Fitz-John Porter Case* (1882); *The Battle of Franklin* (1897). His *Military Reminiscences of the Civil War* (2 vols.) were published posthumously in 1900. Consult J. R. Ewing, *Public Services of Jacob Dolson Cox* (Washington, 1902).

COX, JAMES M. (1870-). An American newspaper proprietor and public official, born at Jacksonburg, Ohio. After a public-school education he worked in a printer's office, taught a country school, then became a newspaper reporter, and was for a time on the editorial staff of the Cincinnati *Enquirer*. In 1898 he became proprietor of the Dayton *Daily News* and in 1903 also of the Springfield *Press-Republic*, thus forming the News League of Ohio. From 1909 to 1913 he was a member of Congress. He became Governor of Ohio for the term of 1913-15.

COX, KENYON (1856-). One of the foremost American mural and figure painters, also a writer on art. He was born in Warren, Ohio, the son of Gen. J. D. Cox, who later became Governor of Ohio. He studied at the academies of Cincinnati and Philadelphia and for five years in Paris under Carolus Duran and chiefly under Gérôme. On his return to America he settled in New York, becoming a prominent leader of the younger element which founded the Society of American Artists; and for years he was an influential teacher in the Art Students' League (q.v.). He soon became known for his figure subjects and especially, among his fellow artists, for his nudes, painted in conservative academic manner. But his great reputation rests upon his mural paintings, which rank among the finest in America. Important examples of the latter are: "Venice," Bowdoin College, Me.; "Art and Science," in the Library of Congress, Washington; eight lunettes illustrating "The Progress of Civilization," in the State House, Des Moines, Iowa; "The Beneficence of the Law," in the Essex County Courthouse at Newark, N. J.; and paintings in the Appellate Court, New York, the State Capitol at St. Paul, the Citizens Bank and Federal Building in Cleveland, the Luzerne County Courthouse at Wilkes-Barre, Pa., and the Public Library at Winona, Minn. Among the best of his pictures are: "Hope and Memory," in the collection of J. D. Cox, Cleveland; "The Hunting Nymph," in the Lotus Club, New York; "A Book of Pictures" (1910, awarded the Isidor medal); "A Vision of Moonrise" (1911); "October Afternoon" (1913). In the Metropolitan Museum, New York, are his "Harp Player" and the portrait of Saint-Gaudens (1887), awarded a medal at the Paris Exposition. Cox is one of the most prominent representatives of the academic tendencies in American painting. His line is strong and vigorous, yet rhythmic, the figures show sound knowledge of anatomy, his composition is dignified, but the color is sometimes harsh. He received medals at various expositions, and was awarded the medal of honor for mural painting by the Architectural League in 1909. He was elected a member of the National Academy of Design

in 1903. His sound and scholarly writings on art subjects include: *Mixed Beasts* (1904); *Old Masters and New* (1905); *Painters and Sculptors* (1907); *The Classic Point of View* (1911).

COX, LOUISE HOWLAND KING (1865-). An American painter, born in San Francisco. She studied at the New York Academy and Art Students' League under Kenyon Cox, the well-known figure painter, whom she married in 1892. Mrs. Cox ranks amongst the foremost American women artists. Her decorative work is similar to that of her husband and, if less robust, is more graceful. Good examples are her mural painting of "The Fates" (1894) and the decorative canvases "Psyche" (1893), "The Annunciation" (1895), and "Pomona" (1896, third Hallgarten prize). She is at her best, however, in her charming portraits of children, whom she portrays with a delightful naturalism. Good examples are "Master Austin Smithers" and "Lucile" (1910); "My Children" and "Goldilocks" (1911); "The Wonder Book" and "Mrs. Homer Saint-Gaudens and Child" (1913). She was elected a member of the National Academy of Design, and won, besides the third Hallgarten prize in 1896, a bronze medal at the Paris Exposition of 1900.

COX, PALMER (1840-). An American illustrator and author, born in Granby, Province of Quebec. He lived for a time in California and began his career by writing for the *Golden Era* and other Western papers, but in 1875 went to New York City, where he still lives. Mr. Cox's productions are almost exclusively in the field of humorous fancy, the most widely known being his sprightly verses and drawings of the *Brownies*, whose experiences fill several volumes.

COX, RICHARD (1500-81). An English bishop born in Buckinghamshire. He was educated at Eton and Cambridge and was tutor to Prince Edward, who, when he became King, made Cox one of the Privy Council and King's almoner. In 1537 he had been made chaplain to Archbishop Cranmer and in 1542 to Henry VIII, and a member of the commission that nullified the marriage of Anne of Cleves. In 1549 he was made Dean of Westminster and one of the seven royal visitors who led Edward's attack on religious, educational, and charitable establishments. Mary put him in prison, but he escaped to Frankfurt, where he became the bitter opponent of John Knox. Elizabeth restored him to the see of Ely (1559), from which he resigned in 1580 after a quarrel with Elizabeth over a grant to Sir Christopher Hatton. He translated the Gospels, the Acts, and the Epistle to the Romans, for the Bishop's Bible, and helped compile the Book of Common Prayer.

COX, SAMUEL (1826-93). An English Baptist biblical expositor, born in London. He graduated at Stepney Baptist Theological College, London, in 1851; was pastor at Southsea (1852-54) and at Ryde, Isle of Wight (1854-59). He was compelled by throat trouble to stop preaching for a while, but was pastor in Nottingham from 1863 till 1888, when failing health compelled his resignation. He died at Hastings, March 27, 1893. His fame rests upon his biblical exposition and his connection with *The Expositor*, a monthly devoted to biblical topics, which he originated and whose first 20 volumes he edited (1875-84). Having become an advocate of Universalist views, he was obliged

to resign his position. His publications were very popular and merited their wide sale. Of them may be mentioned: *The Private Letters of St. Paul and St. John* (London, 1867); *The Quest of the Chief Good* (1868; rewritten as *The Book of Ecclesiastes, with a New Translation*, 1890); *An Expositor's Note-Book* (1872); *The Pilgrim Psalms* (1874); *Salvator Mundi* (1877) and *The Larger Hope* (1880), which two books on eschatology stirred up much controversy; *A Commentary on the Book of Job, with a Translation* (1880); *Expositions* (4 vols., 1885-99); *The Bird's Nest and Other Sermons for Children of All Ages* (1886); *The Hebrew Twins: A Vindication of God's Ways with Jacob and Esau* (London, 1894). Consult the prefatory memoir by his wife in the last-mentioned work.

COX, SAMUEL HANSON (1793-1880). An American clergyman, born at Rahway, N. J., of Quaker ancestry. He began to study law, but left it for theology, and was ordained a Presbyterian minister in 1817. Four years later he took charge of a church in New York City, where he was mobbed for his antislavery sentiments, his house and church being sacked. He was one of the founders of what is now New York University. In 1834 he became professor of sacred rhetoric in the theological seminary at Auburn, N. Y., and in 1837 pastor of the First Presbyterian Church in Brooklyn, where he remained until 1854, being professor of ecclesiastical history in Union Theological Seminary, and a leader of the "New School" Presbyterians. In 1854 his voice failed, and he resigned his pastorate. He wrote *Quakerism not Christianity* (1833) and *Interviews, Memorable and Useful* (1853).

COX, SAMUEL SULLIVAN (1824-89). An American politician and author, born in Zanesville, Ohio. He graduated at Brown University in 1846 and was later admitted to the bar, but forsook the law in 1853 to become editor of the *Ohio Statesman* at Columbus. For one year he was Secretary of Legation in Peru. He represented Ohio in Congress for eight years (1857-65), and New York, whither he removed in 1866, for 20 years (1869-85, and 1886-89). In 1885-86 he was Minister to Turkey. He was popularly known as the "letter-carriers' friend" in reference to legislation proposed by him for increase in their salary and the concession to them of a vacation with pay. A statue of him was erected by the letter carriers in New York City. Mr. Cox wrote and lectured a great deal, some of his works being: *Eight Years in Congress* (1865); *The Buckeye Abroad* (1851); *Why We Laugh* (1876); *Arctic Sunbeams* (1882); *Orient Sunbeams* (1882); *Three Decades of Federal Legislation* (1885); *Diversions of a Diplomat in Turkey* (1887). A glowing piece of descriptive writing published in the *Statesman* during his editorship won him the nickname "Sunset," which clung to him through life.

COXAL/GIA (Neo-Lat., from Lat. *coxa*, hip, Gk. *ἀλγος*, *algos*, pain), or **COXITIS**. An obsolete name of hip-joint disease. Inflammation, with or without suppuration, occurs in the joint, with the result that its usefulness is destroyed either from stiffness or necrosis.

COXCIE, kök'sè, or **COXIE**, MICHEL (1499-1592). A Flemish painter. He was born in Mecklin and studied with Barend von Orley in Brussels, spent many years in Italy, and

though probably not a pupil of Raphael, imitated him closely. He was the first Fleming to attempt life-size frescoes in the style of the Roman school, which gives historical importance to his decoration of the Santa Barbara Chapel in Santa Maria dell' Anima. He was appointed court painter by Philip II of Spain and commissioned to copy the altarpiece of the brothers Van Eyck (q.v.) in Ghent. Although his art is cold and rather unpleasing, he was something of an innovator, and his style is clearly defined. Good examples of his painting are in the Escorial and the Museums of Brussels, Antwerp, Madrid, Vienna, and Prague.

COXCOMB, köks'kôm, THE. A comedy by Beaumont, Fletcher, Rowley, and others (1612).

COX'COX'. The legendary Noah of the Mexican tribes, who with his wife escaped the Deluge. In its present form the legend shows probable Christian influence from early Spanish missionaries.

COXE, ARTHUR CLEVELAND (1818-96). An American prelate, second Protestant Episcopal Bishop of Western New York, son of Samuel Hanson Cox. He was born at Mendham, N. J., graduated at the University of New York in 1838, and at the General Theological Seminary in 1841, and in 1842 was ordained priest. Rector in Hartford, Conn. (1842-54), Baltimore, Md. (1854-63), and New York City (1863-65), he was in 1865 appointed Bishop of Western New York. In 1872 he visited Haiti, to establish churches and ordain clergy. He also founded the Christian Literature Company, of whose publications he edited a series of the Ante-Nicene Fathers. His writings include several volumes of verse, of which the *Christian Ballads* (1840; rev. ed., 1887) is the best known; and several theological works, such as *The Criterion* (1866), in opposition to the Tractarians, though he had been in sympathy with the earlier Oxford movement. *Apollo*, or *the Way of God* (1873); *The Institutes of Christian History* (1887).

COXE, HENRY OCTAVIUS (1811-81). An English scholar. He was born at Bucklebury and was educated at Oxford. From his appointment as underlibrarian at the Bodleian Library in 1838 until his death he devoted himself to the compilation of the colossal catalogue, comprising 723 folio volumes. In 1857 he was sent by the British government to inspect the libraries in the monasteries of the Levant, and in 1860 he became chief librarian of the Bodleian Library. His other important publications include Roger de Wendover's *Chronica sive Flores Historiarum* (5 vols., 1841-44); *Metrical Life of Edward the Black Prince* (written in French, by Chandos Herald), with a translation and notes (1842); Gower's *Vox Clamantis* (1850).

COXE, TENCH (1755-1824). An American economist, born in Philadelphia. He served in the Continental Congress (1788) and was appointed Assistant Secretary of the Treasury in 1789. In the same year he proposed the introduction of Sir Richard Arkwright's cotton-spinning frame into the United States. The extensive planting of cotton in the South was due chiefly to his initiative; for this reason he is frequently called the "father of the American cotton industry." Among his works on economic subjects are: *An Inquiry into the Principles for a Commercial System for the United States* (1787); *View of the United States*

(1787-94); *On the Navigation Act* (1809); *Statement of the Arts and Manufactures of the United States for the Year 1810* (1814).

COXE, WILLIAM (1747-1828). An English historian. He was born in London and was educated at King's College, Cambridge. In 1771 he took the curacy of Denham, but soon resigned to become the tutor of several young noblemen. With them he spent many years in travel, and with great industry collected information of all kinds, which appears in many volumes of travels and history, all of which are characterized by close observation, care, and research. In 1786 he became a vicar again. He was made prebend of Salisbury in 1791 and archdeacon of Wiltshire in 1804. One of his best-known works is his *History of the House of Austria from 1218 to 1792* (1807). He also wrote: *Memoirs of the Bourbon Kings of Spain from 1700 to 1788* (1813); *Memoirs of John, Duke of Marlborough* (1818-19); a *Life of Ouy*, published separately from his *Fables* (1897); *Memoirs of Sir Robert Walpole* (1798); *Memoirs of Horatio, Lord Walpole* (1802).

COXIE, MICHEL. See COXCIE, MICHEL.

COXSWAIN (also *cockswain*, from *cock*, from OF., Fr. *coque*, boat, probably from ML. *concha*, small boat, from Lat. *concha*, Gk. *κόγχη*, *konché*, Skt. *śaṅkha*, shell + *swain*, AS. *sveinn*, from Icel. *sveinn*, OHG. *svein*, herdsman). A petty officer in the navy who has charge of a boat and crew in the absence of officers. In double-banked boats he steers, and has a small seat in the *coxswain's box*, or after part of the boat abaft the stern sheets. The coxswain of a steam launch or large motor launch always stands while steering. The steering station is forward, aft, or on deck, depending upon the size and type of boat. In single-banked boats the coxswain usually pulls the stroke oar. The steersman of a racing or other crew is also known as a coxswain.

COXWELL, HENRY TRACEY (1819-1900). An English aeronaut. He was born at Wouldham, near Rochester Castle, and was educated at the Chatham Military School. He invented a balloon from which aerial torpedoes could be discharged, and made hundreds of ascensions, the most important being that undertaken with Glaisher in 1862, when the balloon sailed to a height of seven miles. (See AERONAUTICS) During the Franco-German War he joined the aeronautic corps of the German Army. In 1845 he established the *Acrostatic Magazine*. Consult his *Life and Balloon Experiences* (1887-89).

COYLE, ROBERT FRANCIS (1850-). An American Presbyterian clergyman, born in Rose-neath, Ontario. He got his early education in Canada, graduated at Wabash College in 1877, studied theology at Auburn Seminary, and was ordained to the Presbyterian ministry in 1879. He held pastorates at Fort Dodge, Chicago (1885-91), Oakland, Cal. (1891-1900), and Denver, and in 1903 was moderator of the General Assembly. He wrote: *Foundation Stones* (1887); *Workmen and the Church* (1896); a volume of sermons called *The Church and the Times* (1905).

COYOTE, kl-ō'tē or kl'ōt (Sp., from Mex. *coyotl*). The modified native Mexican name of the prairie wolf (*Canis latrans*), now universally adopted throughout the western United States. The coyote in several varieties is abundant almost everywhere from the Plains to the Pacific, south of central British Columbia, and

is famous for its monotonous and reiterated yelping at night. This more resembles the barking of a dog than the howl of the ordinary wolf, and an early name was "barking wolf." One thinks half a dozen are yelping in chorus as he listens to it. It generally travels in packs, like other wolves, but, unlike them, it never attacks human beings. It is of rather small size, about as big as a setter dog, of a light-reddish or yellowish-gray color, the longer hairs of the back tipped with black. The pelage is rather full and soft, the tail is bushy, the ears are upright, and the muzzle is slender and pointed. About 12 species are recognized by naturalists, while there are a number of subspecies or well-marked geographical races. Coyotes live in hollows among rocks, or take possession of old burrows in the ground, and usually produce four puppies in late spring, although the number varies from three to ten. They hunt chiefly in the dusk. They are very fleet of foot, and two or three by acting in concert will run down a pronghorn; they seek to detach and seize the fawns, however, rather than to pull down adults. Their food consists mainly of gophers, ground squirrels, mice, ground-nesting birds, and similar small animals; and they have become a great nuisance in the neighborhood of ranches and isolated settlements, especially in winter, by attacking sheep, poultry, calves, etc. To such an extent do they destroy sheep that many of the Western States offer a bounty for the scalp and forepaws. Adapting themselves thus readily to circumstances, and having extreme cunning in avoiding traps and poison, they survive among the sparser settlements of the West and in some regions increase rather than diminish. They will cross with the domestic dog, producing fertile hybrids; and the Indians were accustomed to induce such mixture of blood. This animal entered more largely than almost any other into the mythology and folklore of the aborigines, especially west of the Rockies. Consult: Ingersoll, *Wild Neighbors* (New York, 1897); Elliot, *Synopsis of Mammals* (Chicago, 1901); and especially Seton, *Life Histories of Northern Animals* (New York, 1909). See WOLF; and illustrations on Colored Plate of CANIDÆ and on Plate of WOLVES AND WILD DOGS with the article WOLF.

COYPEL, kwä'pél'. A family of French painters.—NOËL (1628-1707), the eldest, was a follower of LeBrun, in whose theatrical style he painted, though with more individuality and greater regard to color than most of his contemporaries. He was employed by Louis XIV on decorative work in Versailles, the Trianon, the Tuileries, and the Hôtel des Invalides; he also painted religious pictures and published several works on art. In 1672 he was appointed director of the French Academy in Rome, and in 1695 director of the Academy in Paris.—His son and pupil ANTOINE (1661-1722) became a member of the Academy at 20, enjoyed high protection at court, and was charged with important commissions by the King. He furnished many cartoons for tapestries, and his paintings are found in most French museums. His art marks the transition from the style of LeBrun to that of Watteau. His color is cold and hard, especially in his later works, and his manner artificial.—His half brother, NOËL NICOLAS (1690-1734), painted mythological and religious pictures and portraits in pastel.—CHARLES ANTOINE (1694-1752), son and pupil of Antoine

Coype, was the most celebrated of the family. He was admitted to the Academy at 21 and was appointed director in 1747. He painted religious pictures in many churches, and decorations for Versailles and the Trianon, but was most successful in his genre pieces. Modern critics reproach him with lack of originality, power, or charm. His discourses at the Academy, published in 1721, and theatrical pieces written for the court, procured him quite a literary reputation. Consult Caylus, *Vie des peintres* (Paris, 1910).

COYPU, koi-pōō' (native South American name), or NUTRIA. An aquatic rodent (*Myopotamus coypu*, or *Myocastor coypus*), widely common in South America. Its name in Chile is "coypu," and on the Pampas "quiya," but it is always called by Spanish-speaking people of education "nutria" ("otter"), by which name its fur is known in commerce. It is not an otter, however, but is nearly allied to the beaver, yet somewhat smaller, and with a ratlike tail. It is dull brown, with a grayish muzzle and bright red incisors; the nostrils are very high, allowing it to breathe with only the tip of the nose above water; and the teats are high on the flanks. When the beaver became scarce, the fur (nutria) of this animal was in great demand for making hats, etc., and the coypus were nearly exterminated, but with less demand and the protection of local laws they have again become numerous. It is thoroughly aquatic, dwelling preferably in the permanent ponds (lagunas) of the La Plata valley, and inhabiting burrows in the banks, where there are banks, or making a platform nest among the rushes. "Of an evening they are all out swimming and playing in the water, conversing together in their strange tones, which sound like the moans and cries of wounded and suffering men, and among them the mother coypu is seen with her progeny, numbering eight or nine, with as many on her back as she can accommodate, while the others swim after her, crying for a ride." For further interesting facts, consult Hudson, *The Naturalist on the La Plata* (London, 1875), *Proceedings Zoological Society* (ib., 1894). Semper, *Animal Life* (London and New York, 1881). See PLATE of BEAVER, ETC.

COYZEVOX, kwā'z'-vōks', ANTOINE (CHARLES ANTOINE) (1640-1720). A French sculptor. He was born in Lyons, studied with Lerambert, and also trained himself by careful study of the antique. He was admitted to the Royal Academy in 1676 and was employed by Louis XIV in decorating Versailles and the palace at Marly. His most notable works are many portrait busts and statues of the most famous men of the day. They include Richelieu, Mazarin, Bossuet, Condé the Great, Fénelon, Racine, Charles LeBrun, also Louis XIV, Louis XV, and Maria Theresa of Spain. Coyzevox also carved a number of memorials.

COZENERS, kūz'n-ēr, THE. A comedy by Samuel Foote (1774).

COZENS, kūz'nz, JOHN ROBERT (1752-99). An English landscape painter in water color. His father was one of the two natural sons of Peter the Great of Russia by a woman of Deptford. He traveled in Italy and the Tirol and left valuable drawings made on that tour. Towards the end of his life he became insane. In his day water-color landscapes were very conventional in drawing and dry in color. Cozens was one of the first to show the value of this medium in the poetical quality of his work,

and attained hitherto unseen atmosphere effects. His conception of nature ranks him as a precursor of the Impressionists. Turner and Constable owe much to Cozens and have spoken in terms of admiration of his landscapes. There are a number of them in the British and South Kensington museums, but the most famous in his day was "Hannibal Crossing the Alps" (1776), which cannot now be located.

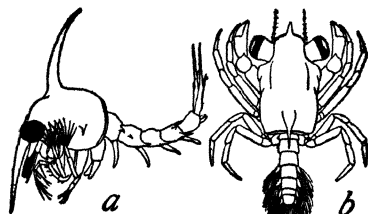
COZUMEL, kō'sōō-māl'. An island off the east coast of the Mexican Province of Yucatan, in lat. 20° N. and extending east of long. 87° W. (Map: Mexico, P 7). It is about 40 miles long and about 15 miles wide. Its surface is low, and the coasts are bordered by reefs. There is a small Indian settlement at San Miguel. The chief industry is cattle raising. The island was discovered in 1518, and here in 1519 Cortés first landed.

COZZENS, kūz'nz, FREDERICK SWARTWOUT (1818-69). An American humorist, born in New York City. He became in early life a wine merchant, and later editor of the *Wine Press*. He had previously contributed humorous poems and articles to magazines, and in 1853 he issued his first volume, *Prismatics*, under the pen name "Richard Haywarde." Then came the *Sparrowgrass Papers*, his best performance, first published in the *Knickerbocker Magazine*, and in 1856 as a widely read volume. They dealt with the trials of a city man who undertakes to run a country home (near Yonkers), and although their humor is mild, they are still fairly readable. Three years later (1859) he published a volume of travel sketches, *Acadia; or, A Sojourn among the Blue Notches*. Soon after the war he failed in a business for which he had labored earnestly, especially by promoting the sale of native wines, and retired from Yonkers to Rahway, N. J. Of his other works only *Poems* (1867) and a *Memorial of Fitz-Greene Halleck* (1868) need be named.

CRAB (AS, *krabba*, Icel. *krabbi*, Ger. *Krabbe*). A crustacean of the order Decapoda and suborder Brachyura, characterized by the small size of the abdomen, which resembles a short tail curved under the thorax, all important viscera being included in the thorax. The term extends also to some of the suborder Anomura (purse crabs, hermit crabs, etc.), characterized by a condition of abdomen intermediate between that of the Brachyura and that of the Macrura, or long-tailed decapod crustaceans, such as the lobster, crayfish, etc. All the crabs, besides many other crustaceans, were comprehended in the Linnæan genus *Cancer*; but the number of species is very great, considerably more than 1000, and the Brachyura alone are now arranged in many genera and families.

These various crabs differ very much in the form of the carapace (the back), which in some is orbicular or nearly so; in some, much broader than it is long; in others, longer than broad; in some, prolonged in front into a kind of beak, etc.; also in its smoothness, or roughness with hairs, tubercles, or spines; in the length of the legs, etc. The eyes are compound, with hexagonal facets, and are elevated on stalks, which are generally short, but sometimes considerably lengthened, and which have the power of motion, so as to turn the eye in different directions. The first pair of limbs are not used for locomotion, but exhibit in great perfection the characteristic claws or pincers (*chelæ*) of the decapod crustaceans. Crabs are inhabitants of

almost all seas; most of them, however, are found chiefly near the coast. Some crabs inhabit fresh water, particularly in the warmer parts of the world; and others, known as land crabs, live among moist herbage, or burrow in sand or earth. Crabs are generally flesh or carrion eaters, though some forms seem to prefer a vegetarian diet. They are always active and are noted for running sideways rather than straight ahead. Some have the last pair of limbs expanded at the extremity into a broad blade for swimming, and some have even all the four pairs of limbs intended for locomotion thus expanded, and sometimes occur far out at sea.



LARVAL STAGES OF CRABS
a, zoea stage, b, megalops stage.

Their development is accomplished by metamorphosis through succeeding stages. "In the crabs the nauplius stage (see CRUSTACEA) is passed through in the egg, and the young is hatched in the form of a peculiarly modified zoea, with an immense cephalothorax produced into spines, large stalked eyes, and a slender abdomen. This passes by successive molts into the megalops stage, which resembles an adult macruran [and] . . . passes by successive molts into the adult form."

Crabs, like all arthropods (see ARTHROPODA), molt or change their shell, not at fixed intervals or seasons, but according to the exigencies of their growth, the change being made with great frequency when they are very young, but rarely in advanced age; indeed, from the mollusks and other animals sometimes found adhering to the carapace, it is inferred that the same covering is sometimes worn for a number of years.

Crabs become interesting in the aquarium, from their readiness in seizing food, their activity in tearing and eating it, and their pugnacity. The number of specimens is apt, however, to be soon diminished by the stronger killing and eating the weaker. Crabs vary greatly in size and color, as might be expected from the great number of species and their wide distribution. The giant crab of Japan (*Macrocheira kempferi*), although only a foot across the disk, which is 18 inches long, has such long legs as occasionally to be 15 to 18 feet from tip to tip of the first pair. The great stone crab of Tasmania, which has short and very thick legs, has been known to reach a weight of over 30 pounds. On the other hand, many species of crab are only a fraction of an inch across. In color crabs vary from black to white, through all the colors of the rainbow. Shades of green, blue, and gray are perhaps the most common, but the brightest shades of red and yellow are by no means rare. The sexes of crabs are easily distinguished, as the females are usually larger, and their abdomens broader and more oval,

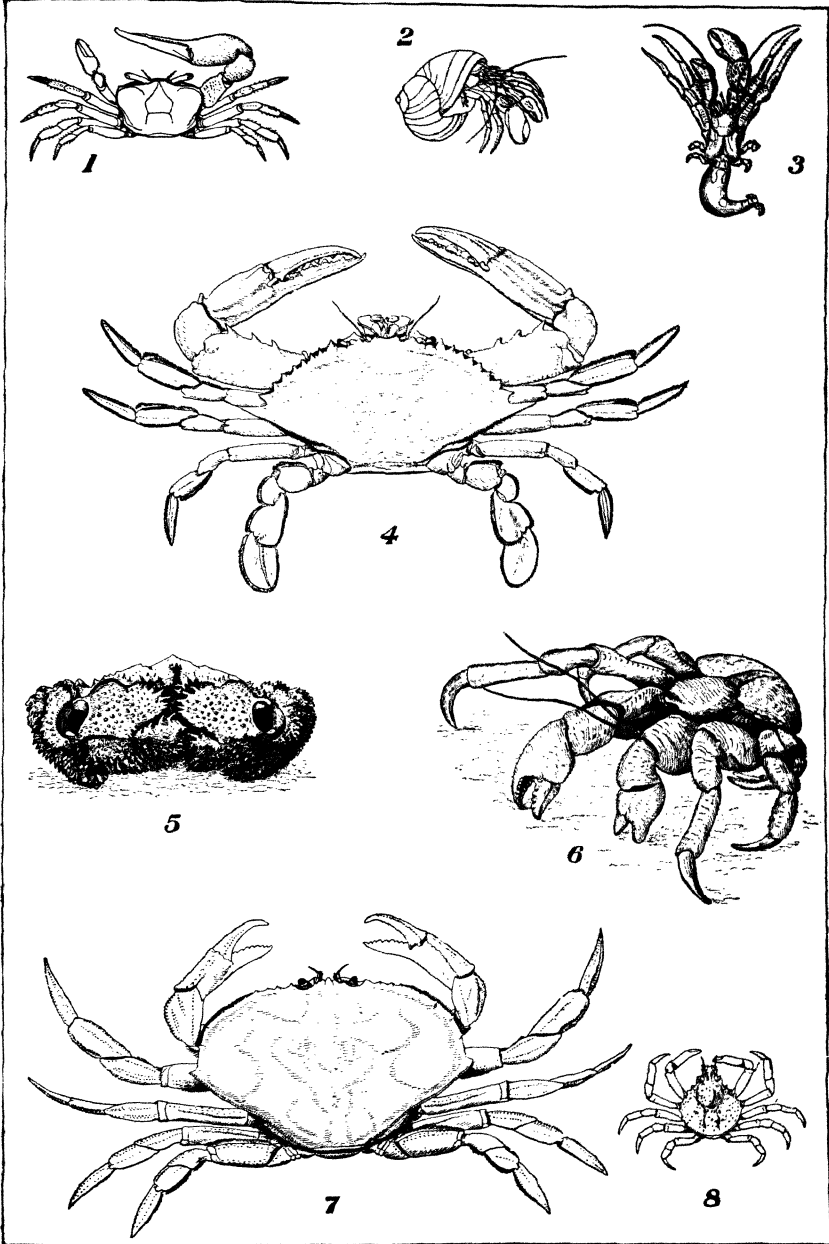
while males have the chelæ more powerfully developed—notably so in the fiddlers.

Economic Importance of Crabs.—These animals supply food for food fishes, are of great service as scavengers, and are used as human food in various parts of the world. In the United States the principal crab so used is the blue crab (*Callinectes hastatus*), hundreds of thousands of which are sent to market every year from the waters of Chesapeake Bay alone. The little pea crabs (*Pinnotheres*) often found in oysters (see COMMENSALISM) are regarded as a great luxury. In Europe the species most frequently used are those of the genus *Cancer*, especially the great *Cancer pagurus*, and there is no reason why the two eastern American species of this genus, the "rock" and "Jonah" crabs (qq.v.), should not be far more utilized as food than they are. To this group belong the principal edible crab of the American Pacific coast (*Cancer magister*), and others smaller which are eaten by the Chinese, etc. This species usually measures 7 to 9 inches in breadth of body and abounds from Alaska to Mexico, usually below low-tide level on sandy bottom. Crabs which have just shed their shell, and are covered only by a soft skin, are regarded as best and are called "shedders" or "soft-shelled."

The ways of fishing are various. Many are taken in wicker traps or "pots," baited with meat or offal; another common method is to sink shallow hoop nets of coarse material and mesh, which are baited and hauled up rapidly at intervals, bringing the crabs with them. Hand-line fishing, with bundles of meat to which the crabs cling until lifted out of water, is more a sport than a method of market fishing; but in the Gulf of Mexico trawls or "trot-lines" are set in several ways, and vast quantities of crabs are thus taken. They are kept for market in floating pens or "cars," and shipped alive packed in wet seaweed. They are also preserved by canning, etc. Consult Calman, "Crustacea" in Lankester's *Treatise on Zoology* (London, 1909) and Calman, *The Life of Crustacea* (New York, 1911).

Fossil Forms. With the exception of some doubtful genera (*Gitocragon*, etc.) from later Paleozoic rocks, no unmistakable fossil crabs are known from deposits antedating those of Mesozoic age. Fossil crabs first appear in the Jurassic, where occur members of the family Dromiacea, much smaller than the modern species, such as the genus *Prosopon*, which continues into the Cretaceous. In the Upper Cretaceous *Dromiopsis* is the ancestor of *Dromia*, which latter appears in the Eocene and continues to modern time. Several other small genera of this same family are found in Cretaceous rocks, in which the family enjoyed its greatest expansion. The Raninoidea, with elongated carapaces, broadly truncated in front, began in the Upper Cretaceous, had its maximum in the Eocene, and has since then declined to the present. Large numbers of the Oxystomata, or round crabs, are found fossil in the Upper Cretaceous and Eocene rocks. The Oxyrhyncha, which at present are very abundant, have few fossil ancestors, and these are of small size. The arcuate crabs, of the family Cyclometopa, contain the largest number of fossil genera. They appeared in the Cretaceous, attained a great expansion in the Eocene, declined during the later Tertiary, and in modern times seem to be again on the increase. This family con

TYPICAL CRABS



1. FIDDLER CRAB (*Gelasimus pugnax*).
2. HERMIT CRAB (*Eupagurus longicarpus*) In a shell of *Natica heros*.
3. HERMIT, out of its borrowed shell, showing reduced and defenseless posterior parts.
4. EASTERN EDIBLE or BLUE CRAB (*Callinectes hastatus*).
5. A DEEP-SEA CRAB (North Atlantic) Its arms closed into a defensive box.
6. COCONUT CRAB (*Birgus latro*).
7. COMMON CRAB OF PACIFIC COAST (*Cancer magister*).
8. SPIDER CRAB (*Libinia emarginata*).

tains most of the modern genera, such as *Cancer*, *Carcinus*, *Portunus*, *Xantho*, *Neptunus*, *Panopæus*. Certain of these are of old age. *Xantho* began in the Cretaceous, had a representative (*Xanthopsis*) that is very common in the Eocene of England, France and Germany, and continued with little change to the present day. *Lobocarcinus*, with its broad, nodose carapace, deeply denticulate on the front margin, is a common and often beautifully preserved fossil crab from the Eocene rocks of Württemberg, Germany, and Cairo, Egypt. The Catometopa, or quadrangular crabs, have many ancestors of Eocene age. The first land crab of the modern genus *Gecarcinus*, and the first fresh-water crab, also of a modern genus, *Telphusa*, both members of this family, are found in the Miocene deposits of Oeningen, Germany.

From the above remarks it will be seen that all the families of modern crabs, with the single exception of the Oxyrhyncha, were initiated during Cretaceous time; that they expanded rapidly so that their periods of maximum evolution were during the Eocene, when indeed crabs formed the dominant feature of the fauna in certain seas; that during the Miocene the general expansion was less than before, although certain genera were extremely abundant in particular localities; and that those of the Pliocene are mostly of recent species. During the present time the crabs seem to be enjoying another period of expansion, but along different lines from those of the Eocene evolution. The best collecting grounds are found in the Eocene deposits of the south of England; the nummulitic limestones of southern France, Switzerland, southern Germany, and of northern Italy, and those of central India; and the Miocene beds of Italy, Austria, Hungary, and Germany.

Consult: Zittel and Eastman, *Textbook of Paleontology*, vol. i (London and New York, 1900); Zittel and Barrois, *Traité de paléontologie*, vol. i (Paris, Leipzig, and Munich, 1887); Bell, "Monograph of the Fossil Malacostracous Crustacea of Great Britain," *Paleontographical Society Monographs* (London, 1857-62); Ortmann, "Das System der Decapodenkrebsen," *Zoologische Jahrbucher*, vol. ix (Jena, 1896); Lorenthey, "Ueber die Brachiuren der palaologischen Sammlung des Bayerischen Staates," *Természettudományi Füzetek*, vol. xxi (Budapest, 1898). See CRUSTACEA, and special articles under names of various crabs, as KING CRAB; SPIDER CRAB; ETC.

CRAB APPLE. See APPLE.

CRABB, GEORGE (1778-1851). An English lawyer and author, born at Palgrave (Suffolk). He was educated at Oxford, admitted to the bar at the Inner Temple (1829), and practiced his profession in London. For a time, also, he was instructor in the classics in a Yorkshire school. His best-known work is the *Dictionary of English Synonymes* (1816; 10th ed., 1849), a careful, if not always scholarly, reference book, which has appeared in numerous editions. Others of his publications are a *History of English Law* (1829); a laborious *Digest and Index of All the Statutes at Large* (4 vols., 1841-47); *Mythology of All Nations* (1847).

CRABBE, GEORGE (1754-1832). An English poet. He was born, Dec. 24, 1754, at Aldeburgh, Suffolk, where his father was collector of salt duties. Crabbe showed early a love for books, with a bias towards poetry. After some schooling he was apprenticed first to a village doctor

and then to a surgeon. By 1772 he was contributing verses to *Whistle's Magazine*, and two years later he published at Ipswich a moral poem entitled *Inebriety*. At this time he was in love with Sarah Elmy, whom he addressed in his poems as "Mira" and whom he afterward married. Continuing his studies in London, he began the practice of medicine in the place of his birth. Disliking a profession in which he was not succeeding, he went to London in 1780 to begin a literary career. In that year appeared a poem called *The Candidate*, which was received coldly. Much distressed, he called upon Burke, who after reading some of Crabbe's verses took him under his protection, getting Dodsley to publish *The Library* (1781). While staying with Burke at Beaconsfield, he began his best-known poem, *The Village* (published 1783). At Burke's suggestion Crabbe took orders. After a short period as rector of Aldeburgh, he was appointed chaplain to the Duke of Rutland (1782) and thus made Belvoir, Leicestershire, his home. After occupying several other church livings, he was given that of Trobridge, Wiltshire (1814), where he remained till his death (Feb. 3, 1832). Besides the poems already cited, Crabbe wrote: *The Newspaper* (1785); *The Parish-Register* (1807); *The Borough* (1810); *Tales in Verse* (1812); *Tales of the Hall* (1819). Crabbe was a popular poet in his own time, numbering friends among the greatest. He was lavishly praised by Dr. Johnson, Scott, Wordsworth, and Byron. Jane Austen, charmed with humor akin to her own, declared that, were she ever to marry, she could fancy herself Mrs. Crabbe. Though his reputation has declined, he nevertheless occupies an important place in the progress of English poetry. Crabbe's stern descriptions of English life in old East Anglia were in marked contrast to Goldsmith's idyllic scenes and led the way to the realism of Wordsworth. What he lacked was the imagination necessary to give lasting interest to his subject. His great excellence is the directness with which he portrays the tragic life of men and women whom he knew and the scenes in which they lived. Consult: *Works*, with memoir, by his son G. Crabbe (8 vols., London, 1834-35; 1 vol., 1901); selections from poems, by Lamplough (ib., 1888), and by Holland (ib., 1899); Stephen's essay in *Hours in a Library* (London, 1876); *Readings in Crabbe* (selected by Edward Fitzgerald, London, 1882); Courthope's essay in *Ward, English Poets* (ib., 1884); the *Life*, by Keble (ib., 1888); Ainger, *Crabbe*, in 'English Men of Letters Series' (New York, 1902); René Huchon, *George Crabbe and his Times* (1907), trans. from the French by F. Clarke. An excellent recent edition of the *Works* is that of Ward (1906) in *Cambridge Press Classics*.

CRAB-EATER, or COBIA. See SERGEANT FISH.

CRAB-EATING DOG, RACCOON', ETC. See DOG; RACCOON; ETC

CRABETH, krä'bēt, DIRK and WOUTER. Dutch painters on glass. They were brothers, born at Gouda, in South Holland, and they flourished in the latter half of the sixteenth century. As the brothers worked together and were the most famous glass painters of their time, they cannot be separated in biography. Very little is known of their lives, but they executed a number of excellent works in the churches of Belgium, France, and Italy. Their chief works are

13 of the 46 colossal windows of the great church at Gouda. Among the best of these are the "Baptism of Christ" and "John the Baptist Preaching," by Dirk, and the "Nativity" and the "Sacrilege of Heliodorus," by Wouter. The latter is superior in drawing and composition but Dirk excels in brilliancy of color. The works of both show a somewhat mannered imitation of the Italian, but they still retain much of the brightness of the medieval coloring. Dirk died in 1577; his brother about 1590. Consult Westlake, *History of Design in Painted Glass*, vol. iv (London, 1894).

CRAB GRASS. A name applied to *Panicum sanguinale*, also known as *Digitaria sanguinalis*, an annual grass common throughout many parts of the United States. It is frequently seen to spring up in fields after the period of cultivation has passed. It grows to a height of 2 to 3 feet, bearing at the top 3 to 12 spreading purplish spikes which carry the flowers and seed. In many places it is considered a weed, but in the South it is valued for the hay it yields as well as for pasturage. The hay must be cured without rain falling upon it or its value is greatly impaired. It ranks close to Bermuda grass in value and in the cheapness with which a crop may be produced. *Eleusine indica* is sometimes called crab grass.

CRABIER, krá'byá' (Fr., crab-eater). The name in the French West Indies and Jamaica for several herons, especially the common night herons (*Nycticorax*). See NIGHT HERON.

CRAB'S EYES. See ABBR'S; CONCRETION.

CRAB SPIDER. A spider of the family Thomisidae, so named on account of the short, broad body and the fact that, like a crab, it runs more successfully sideways or backward than forward. These spiders spin no web, but await their prey hidden among foliage, and are colored in harmony with their background; but a few species are bright-colored and hide in flowers. The most common American form (*Uisumena rufa*) is milk white, occasionally with light-crimson markings. Another species (*Phidolomus vulgaris*) eats house flies almost exclusively. Consult Emerton, *The Common Spiders of the United States* (Boston, 1902), and Fabre, *The Life of the Spider*, trans. by De Mattos (New York, 1913). Compare BIRD SPIDER.

CRAB'S PLOVER. A singular shore bird (*Dromas ardola*) nearly related to the oyster catchers, but set apart in a family, Dromadidae, of its own, which is to be found sparingly on the coasts and islands of the Indian Ocean. "Its habits remind us both of the plovers and the terns, and so do the unusually large eggs," but in India, according to Hume, it nests in burrows in sand hills.

CRABTREE, CHARLOTTE (1847-). An American actress, known as Lotta. She was born in New York and when a child of six began her career in California. After starring for a time in the West, she came again to New York about 1860. In 1867, as Little Nell and the Marchioness in a dramatization of *Old Curiosity Shop*, she made her first great impression there and became a popular favorite. Her success was entirely due to her personal charm. Critics found little to approve in the pieces in which she appeared, such as *The Little Detective*, *Zip*, *Musette*, and *The Firefly*, but her stage appearance was characterized by a naturalness and grace which won the hearts of the

audience. She retired from the stage, still unmarried, in 1891, having acquired a fortune. Consult Welch, in McKay and Wingate's *Famous American Actors of To-Day* (New York, 1896), and Clapp and Edgett, *Players of the Present*, Dunlap Society Publications (ib., 1899).

CRACKED HEELS. See HORSE.

CRACKER. See BISCUIT.

CRACKERS. A name given in the southern part of the United States to the poor and ignorant whites, probably because of their usual diet, which is cracked corn ground into a coarse meal. The term "corn-crackers" is employed in the same sense.

CRACKER STATE. Georgia. See STATES, POPULAR NAMES OF.

CRACK'LIN, or **CRACKLE WARE.** A kind of china ware, the glazing of which is purposely cracked in the kiln, as an ornament, the effect being produced by a glaze which tends to contract in the burning more rapidly than the vessel itself. This ware is produced for the most part in China and Japan, but it has also been made at a pottery at Dedham, Mass., where two varieties of crackle ware are made. Both have a gray body, resembling true porcelain and are fired at a high temperature. To one of these various colored glazes are applied, ranging through various shades of red, green, and olive, while the other, the gray crackle ware, differs only in color and is usually decorated in blue. Consult "American Art Pottery" in *Special Reports of the Census Office: Manufactures, part iii*, 1905 (Washington, 1908).

CRACOW, krá'kó (Pol. *Kraków*, Ger. *Krakau*, Fr. *Cracovie*, Lat. *Cracovia*, *Carodunum*; said to be named after its founder, *Krakus*, a legendary Slavic chief). The ancient capital of the Kingdom of Poland and residence of the Polish kings, now a fortified city of the Austrian Crownland of Galicia (Map: Austria, F 1). It is situated on the left bank of the Vistula, at its confluence with the Rudowa, about 10 miles from the frontier of Russian Poland and 200 miles northwest of Vienna. Cracow, with its numerous churches, towers, and old castle, presents an imposing aspect from without. It consists of the inner town and a number of suburbs. The old walls surrounding the inner town have been demolished, and promenades laid out on their site. Cracow is one of the oldest cities of Poland (according to tradition, a stronghold was built here about 700 A.D.), and it bears the marks of its age in its imposing buildings as well as in its general appearance. The city has about 40 churches, scarcely more than half the number it formerly had, and about 25 convents. The most important church is the Stanislaus Cathedral, a Gothic structure, situated near the castle. It was erected under Casimir the Great, being consecrated in 1359. Here the Polish kings were crowned and here are they buried, together with many national heroes, including Sobieski, Poniatowski, and Kosciuszko. Also the remains of St. Stanislaus, the patron saint of the Poles, are said to rest here. The church is also adorned with numerous monuments, several of them by Thorwaldsen, and with notable paintings and other objects of art. The church of St. Mary, a Gothic basilica, was founded early in the thirteenth century and has been rebuilt several times. It contains a magnificent high altar by Veit Stoss and a number of monuments. Besides these churches there are a number of other very interesting medieval ones. Among the

interesting secular buildings is the former royal castle, situated on a broad hill at the southwestern end of the town; it was built in the thirteenth century (and subsequently enlarged) and suffered greatly from conflagrations. Until 1610 it was the residence of the Polish kings; from 1846 it was used as a barracks and military hospital, but it is now restored. The old cloth hall, dating from the thirteenth century, is now used as an art museum, and contains paintings by Polish artists, such as Matejko, Siemiradzki, and others. In front of the cloth hall is a bronze statue of Mickiewicz, one of Poland's greatest poets. Among other notable buildings and historical monuments are the old and new theatres and the Rondell, a relic of the old fortifications. The chief educational institution is the famous university, styled the Jagellonian University, founded by Casimir the Great in 1364. It developed very rapidly and eventually became the intellectual centre of Poland. It has faculties of jurisprudence, medicine, philosophy, and theology, with an attendance (1911) of 2805 students. The university library contains over 300,000 volumes, besides numerous manuscripts, engravings, ancient documents, etc. Attached to the university are also an observatory, a botanical garden, a natural-history museum, and a number of other institutions. The university occupies a splendid Gothic building erected in 1881-87; the library is housed in the old fifteenth-century buildings. Among other prominent educational establishments are the Royal Academy of Sciences, and the art school (until 1893 under the supervision of Matejko), several seminaries, and a number of artistic and literary societies. The Czartoryski Museum contains a collection of sculptures and antiquities and a fine picture gallery, with examples of the Italian and Dutch schools. Cracow remains the intellectual centre of the Polish nation.

There are manufactures of machinery, textiles, leather, chemicals, etc., but industrially Cracow has not greatly developed. It is more important for its trade in grain, timber, salt, textiles, and cattle. In the vicinity of the city is situated Kosciuszko Hill, a mound 65 feet high, erected in 1820-23 by the residents of Cracow, in honor of Kosciuszko, and since converted into a fort. The fortifications of Cracow are very extensive. Eight miles southeast of Cracow is Wiehczka, famous for its salt mines. Across the Vistula from Cracow is the town of Podgórze, with 22,232 inhabitants. In 1900 the city had 91,323 inhabitants, the census of Dec. 31, 1910, returned 151,886. Of the latter, the vernacular of 133,158 was Polish; Roman Catholics numbered 116,656; Jews, 32,321. In 1912 Plaszów (pop., 2255) was annexed to Cracow.

Cracow rose into importance in the Middle Ages as the seat of a bishopric and a centre of commerce and trade, its prosperity being enhanced by the influx of German immigrants. It suffered terribly at the hands of the Tatars in the thirteenth century. It became the capital of Poland early in the fourteenth century, and after having been superseded by Warsaw in 1610, it still remained, until 1764, the place where the Polish kings were crowned and buried. It later became exceedingly impoverished, so that at the end of the eighteenth century its population was only about 10,000. In 1655 and 1702 the town was taken by the Swedes. It was the starting point of the rising of the Poles for

independence under Kosciuszko in 1794, and came into the possession of Austria at the third partition of Poland, in 1795. From 1809 to 1815 Cracow formed a part of the Duchy of Warsaw. The short-lived Republic of Cracow, established at the Congress of Vienna in 1815, under the protectorate of Russia, Prussia, and Austria, was the last remnant of an independent Poland. It consisted of the city of Cracow and some adjacent territory, with a total population of about 140,000. The participation of a portion of the population in the Polish uprising of 1830 gave Russia an opportunity for military occupation. After that Cracow was repeatedly occupied by foreign troops. The little republic took a leading part in the Polish insurrection of 1846. The patriots were at first successful, but their overthrow soon ensued, and Cracow was annexed to Austria in the same year. In 1849 it was incorporated with Galicia. Cracow remains to the present day a great focus of Polish national life.

CRACOW, UNIVERSITY OF. See CRACOW.

CRADDOCK, CHARLES EGBERT. The nom de plume of Mary N. Murfree (q.v.), the Southern novelist.

CRADLE OF LIBERTY, THE. The name popularly given to Faneuil Hall, Boston, as the scene of early popular protests against British rule.

CRADOCK, krád'ok, SIR. See CARADOC.

CRAFTON. A borough in Allegheny Co., Pa., 4 miles west of Pittsburgh, on the Pittsburgh, Cincinnati, Chicago, and St. Louis Railroad (Map: Pennsylvania, B 6). It is in a coal-mining and oil district. Pop., 1900, 1927; 1910, 4583.

CRAFTS, JAMES MASON (1839-). An American chemist. He was born in Boston and received his education at the Lawrence Scientific School of Harvard. In 1859 he went to Germany and studied at the Academy of Mines of Freiberg and at the University of Heidelberg. At the latter institution he acted for some time as private assistant to Bunsen. In 1861 he went to Paris, and there, in Wurtz's laboratory, he first met Charles Friedel, in conjunction with whom he later carried out some of his most brilliant researches. In 1865 he returned to the United States, and, after devoting some time to mining, accepted the position of head professor of chemistry and dean of the faculty at Cornell University, where he remained until 1870. During the following four years he acted as professor of chemistry at the Massachusetts Institute of Technology, but in 1874 took leave of absence, joined Friedel in Paris, and devoted himself exclusively to scientific research. His investigations were mainly in the field of organic chemistry, but his name is connected also with many interesting achievements in physics and in physical chemistry. He invented a new hydrogen thermometer; measured the densities of iodine at very high temperatures; demonstrated an interesting regularity in the variation of the boiling points of chemically allied substances with the external pressure; prepared a number of new compounds of the element silicon, which are interesting because of their chemical resemblance to the corresponding compounds of carbon; and also prepared new compounds of arsenic. But his most important achievement was the discovery, jointly with Friedel, of one of the most fruitful synthetic methods in organic chemistry. Hundreds of new carbon compounds

have been brought into existence by this method, which is based on the catalytic action of the chloride of aluminum.

In recognition of Crafts's services to science, the French government made him a chevalier of the Legion of Honor (1885), and the British Association for the Advancement of Science made him one of its corresponding members. In 1891 he again returned to this country, and from 1892 to 1897 acted as professor of organic chemistry at the Massachusetts Institute of Technology. In 1898 he became the president of the institute, and in the same year Harvard University conferred upon him the honorary degree of Doctor of Laws. In 1900, however, he resigned the presidency of the Institute of Technology, and again turned to the investigation of problems in organic and physical chemistry. The numerous results of Dr. Crafts's researches were published in various scientific periodicals, mainly foreign. He also wrote a textbook of *Qualitative Analysis* (1869, and several later editions).

CRAFTS, WILBUR FISK (1850-). An American clergyman. He was born in Fryeburg, Me.; graduated at Wesleyan University in 1869 and at the Boston University School of Theology in 1872; held various positions in the Methodist Episcopal church, and in 1880 became a Congregational minister. From 1883 to 1888, however, he was the pastor of the First Union Presbyterian Church of New York. He conducted an International Sunday-School Parliament at the Thousand Islands in 1876-77, wrote many books for the Sunday school, and founded the American Sabbath Union in 1889 and the International Reform Bureau in 1895. He also published: *Must the Old Testament Go?* (1883); *Successful Men of To-Day* (1883); *The Sabbath for Man* (1885); *The March of Christ down the Centuries* (1902); *That Boy and Girl of Yours* (1905); *Internationalism* (1908); *World Book of Temperance* (1908); *Prohibition Hand Book* (1911).

CRAFTSMAN, THE. A powerful journal organized in 1726 by Bolingbroke and Pulteney, with Nicholas Amhurst, who conducted it under the name of "Caleb D'Anvers of Gray's Inn." It was the organ of the Opposition against Sir Robert Walpole.

CRAIG MARTIN, or ROCK SWALLOW. A swallow (*Hirundo rupestris*), closely allied to the bank swallow (*q v*), which is found from Portugal eastward to China in the breeding season, migrating to the tropics for the winter. It frequents mountains and rocky river banks among hills, but does not ascend to Alpine regions. It builds in niches of the rocks a large, open-topped nest of mud, occasionally (as in the villages of the Pyrenees) placing this on the timbers of buildings or among ruins, and lays profusely speckled eggs. "The general color of the adult bird is a light ashy brown above, the lower parts being creamy buff, and the tail feathers are dark brown, the central and outer pairs being conspicuously spotted with white." Consult Sharpe and Wyatt, *Monograph of the Hirundinidae* (London, 1885-94).

CRAIG, KRIG, CHARLES FRANKLIN (1872-). An American army officer and bacteriologist. He was born in Danbury, Conn., graduated from the Yale Medical School in 1894, was appointed acting assistant surgeon in the United States army in 1898, and in 1908 became captain and assistant surgeon. Thereafter as biologist and bacteriologist he served in army hospitals at

Chickamauga Park, Ga., Fortress Monroe, Havana, the Presidio, Cal., and Manila. In 1896-97 he was a member of the Army Board for the Study of Tropical Diseases; after 1909 he was assistant curator of the Army Medical Museum in Washington, at the same time acting as instructor in clinical microscopy and bacteriology at the Army Medical School in Washington; and in 1910-11 he was also assistant professor of bacteriology in the medical department of George Washington University. He published: *The Estivo-Autumnal Malarial Fevers* (1901); *The Malarial Fevers and the Blood of Protozoa of Man* (1909); *The Parasitic Amœbæ of Man* (1911); also "Malarial Fevers," in Osler's *Modern Medicine* (1907); "Parasitic Disease," in Hare's *Modern Treatment* (1911).

CRAIG, EDWARD GORDON (1872-). An English actor, producing manager, and writer on the theatre, the son of Ellen Terry. He was born near London, played his first part in a London theatre when only six years old, and appeared again in Chicago when he was 13; but his regular début was made in 1889 under Sir Henry Irving, his mother appearing in the same performance. He continued with Irving till 1897, when he left the stage and devoted himself to the study of drawing and wood engraving. In 1900 he began a series of operatic and theatrical productions in which he put in practice some novel ideas in regard to scenery and the mechanical details of stage management. His success with these innovations led him to devote his time wholly to the art of production, and in 1913 he founded a school in Florence, Italy, for the dissemination of his theories of theatrical art. He published, besides numerous magazine articles: *The Art of the Theatre* (1905); *On the Art of the Theatre* (1911); *Towards a New Theatre* (1913).

CRAIG, FRANK (1874-). An English painter and illustrator. He was born in 1874 in Abbey Wood (Kent), and studied at the Royal Academy under Edwin Abbey. He began as a painter of modern English life and contemporary history, such as the Boer War, and as an illustrator for Kipling's poems and for the *London Graphic* and other magazines. In 1905 he joined the new Pre-Raphaelite movement, and thereafter painted historical pictures full of expressive figures and quaint costumes, in their general color scheme often resembling Gobelin tapestries. Good examples are: "The Heretic" (1906, National Gallery, London); "The Maid" (1907, Luxembourg); and "The Meeting House of Nonconformists" (1908). Among his more recent work the curiously characteristic portraits of Sir John Jardine and Major General Douglas Scott (1910) deserve mention. A good example of his early style is the "Communion on the Velt" (1900, Durban Museum, South Africa).

CRAIG, JAMES ALEXANDER (1855-). An American Semitic scholar, born at Fitzroy Harbor, Ontario. He was educated at McGill, Yale, and Leipzig universities, was instructor and adjunct professor at Lane Theological Seminary (1886-90), professor of Old Testament literature and exegesis at Oberlin Theological Seminary (1891), and, after 1893, professor of Semitic languages and literatures and Hellenistic Greek at the University of Michigan. In 1904 he was a member of the Congress of Arts and Sciences at St. Louis. Besides editing *The Semitic Series of Handbooks* his publications in-

clude: *Inscriptions of Salmanassar, King of Assyria*, 859-826 B.C. (1887); *Metrical Translation of the Epic of Ishtar*; *Hebrew Word Manual* (1890); *Assyrian and Babylonian Religious Texts* (2 vols., 1895-97); *Astronomical-Astrological Texts of Babylonians* (1899).

CRAIG, SIR JAMES HENRY (1748-1812). An English soldier, born in Gibraltar, son of the Judge-Advocate-General there. In 1763 he was gazetted an ensign, and in 1771 was appointed captain in the Forty-seventh Foot. He accompanied his regiment to America, was wounded at Bunker Hill, in 1776 was transferred to Canada, and in 1777 was at the capture of Fort Ticonderoga. General Burgoyne before Saratoga intrusted him with dispatches to England. He was promoted to be major in the Eighty-second, proceeded to Nova Scotia, and in 1781 served under Lord Cornwallis in North Carolina. In 1795, having then risen to the rank of major general, he was placed in command of the expedition to the Cape of Good Hope. Aided by Rear Admiral Elphinstone and Major General Clarke, he obtained the surrender of the colony on September 14. He went in 1797 to India; was promoted lieutenant general in 1801; and in 1805, as a local general in the Mediterranean, landed with 7000 troops at Castellamare, with orders to cooperate with the Russian forces under General Lacy in an attack upon the French. After Austerlitz he withdrew to Sicily. In 1807 he was appointed Governor General of Canada. After a somewhat vexed administration he resigned in 1811, and in 1812 was promoted to be general.

CRAIG, JOHN (1512-1600). A preacher of the Scottish Reformation. He was born in Aberdeenshire and educated at St. Andrews. He entered the Dominican Order, but soon fell under the suspicion of heresy and was cast into prison. On his release (1536) he traveled on the Continent, and after some time was, through Cardinal Pole's influence, made novice master in the Dominican convent at Bologna and later was rector. While here Calvin's *Institutes* fell in his way and converted him to Protestant doctrines. He was brought before the Inquisition and sentenced to be burnt—a fate from which he was saved by the mob, on the death of Pope Paul IV, breaking open the prisons of Rome. Craig escaped to Vienna and obtained favor at the court of Maximilian II; but the Pope demanded his surrender as one condemned for heresy. The Emperor, however, instead of complying with the request, gave Craig a safe-conduct out of Germany. He now returned to Scotland (1560) and was appointed the colleague of John Knox in the parish church of Edinburgh. Thinking the marriage of Queen Mary and Bothwell contrary to the Word of God, he boldly refused to proclaim the banns, but afterward yielded under protest. In 1572 Craig was sent "to illuminate the dark places" in Forfarshire until 1579, when he was appointed chaplain to King James VI. He now took a leading part in the affairs of the Church, was the compiler of part of the *Second Book of Discipline*, and the writer of the national covenant signed in 1580 by the King and his household. He was a man of great conscientiousness and was not slow to oppose the proceedings of the court when he deemed them contrary to Scripture and to speak wholesome but unpleasant truths to majesty itself. He died Dec. 12, 1600. Consult the black-letter facsimile reprint of Craig's *Catechisms*

(Edinburgh, 1885), with introduction by T. Graves Law.

CRAIG, KATHERINE L. An American educator. She attended Missouri Valley College, was elected superintendent of public instruction of Colorado in 1904 (re-elected 1906), and became field secretary of Colorado Woman's College in 1909. Besides annotating the school laws of Colorado and compiling *Arbor Day*, *Flag Day*, and *Washington and Lincoln Day* books for the public schools, she is author of *Primary Geography* and a novel, *Judge Greyburn and Kathlene Lee* (1902).

CRAIG, SIR THOMAS (1538-1608). A Scottish lawyer, author, and poet. Educated at St. Andrews and in Paris, he passed as advocate at the Scottish bar in February, 1563, and was appointed justice depute. He gained the favor of James VI, who, notwithstanding his modest and persistent refusal, created him a knight in 1603. Besides some much-admired Latin verse and prose, he wrote *Jus Feudale* (ed. Burnet, 1655; new ed., with notes and corrections by James Baillie, 1766). Thus learned work is still an authority on feudal law.

CRAIGENPUTTOCK, krägen-put'tök. A farm in the southwestern part of Dumfriesshire, Scotland, situated 12 miles north of Castle Douglas and celebrated as the residence of Thomas Carlyle. It belonged to Jane Welsh before her marriage to the author. The Carlyles lived there most of the time between 1828 and 1834. Much of Carlyle's writing was done at Craigenputtock, and there are frequent references to it in his published correspondence. Consult "Homes and Haunts of Carlyle," in *Westminster Gazette* (London, 1895).

CRAIGHILL, krä'gil, WILLIAM PRICE (1833-1909). An American military engineer, born at Charlestown, W. Va. He graduated in 1853 at the United States Military Academy; in 1854-55 superintended the building of Fort Sumter, and in 1858 that of Fort Delaware, and was for several years an instructor at the academy. In 1863 he constructed the defenses of Pittsburgh and in 1865 was brevetted a lieutenant colonel for service in the defense of Cumberland Gap. He was promoted to the rank of major, and from 1865 to 1867 was in charge of the defenses of Baltimore harbor. Subsequently he was concerned with several public works, such as the improvement of the Potomac River (1870-74) and the Delaware River (1873). He was chief of engineers of the United States army, with the rank of brigadier general, from 1895 until his retirement at his own request in 1897. In 1894 he was president of the American Society of Civil Engineers. His publications include an *Army Officer's Pocket Companion* (1862) and a translation of Dufour's *Cours de tactique* (1863).

CRAIGIE, krä'gë, PEARL RICHARDS. See HOBBS, JOHN OLIVER.

CRAIGLEITH (krä'gëth') **STONE**. A siliceous sandstone belonging to the Carboniferous series, quarried at Craigleith, near Edinburgh. It is largely used in that city for building purposes, for which it is admirably adapted by its purity, durability, and the ease with which it can be wrought.

CRAIK, KRÄK, DINAH MARIA (1826-87). An English novelist, better known as Miss MULOCK. She was born at Stoke-upon-Trent, Staffordshire. In 1849 she published *The Ogilvies*, her first novel, and rapidly afterward: *Olive* (1850); *The Head of the Family* (1851); *Alice Lear-*

mount (1852); *Agatha's Husband* (1853; 6th ed., 1865); *John Halifax, Gentleman* (1857); *A Life for a Life* (1859); *Christian's Mistake* (1865); and a great number of short papers. A pension of £50 was granted to her in 1864. In 1865 she married George Lillie Craik. Among her later works is *Sermons Out of Church* (1875). Her literary reputation rests chiefly upon *John Halifax, Gentleman*, a classic picture of middle-class English life, which had a remarkable success and appeared in frequent later editions. Some of her *Poems of Thirty Years, New and Old* (1881), such as "Douglas" and "Philip, my King," have been popular. She wrote several stories for her own children that ran through many editions. These include *The Adventures of a Broeune* (1872; new ed., 1911), and *The Little Lame Prince* (new ed., 1909).

CRAIK, GEORGE LILLIE (1798-1866). An English miscellaneous writer. He was born at Kennoway, Fifeshire, and was educated for the Church at St. Andrews University; but, preferring a literary career, he went to London in 1826. His first work of importance was the *Pursuit of Knowledge under Difficulties* (1830-31), forming part of the series of publications issued by the Society for the Diffusion of Useful Knowledge. He also contributed largely to the *Penny Magazine* and the *Penny Cyclopaedia*. In 1837 Craik became editor of the *Pictorial History of England*, some of the most valuable chapters of which were written by himself, and afterward enlarged and republished separately as independent works. Such are his sketches of the *History of Literature and Learning in England from the Norman Conquest to the Present Time* (1844-45), and his *History of British Commerce* (1844). In 1846 he published *Spenser and his Poetry*, and in 1846-47 *Bacon and his Writings*. In 1849 Craik was appointed to the chair of history and English literature in Queen's College, Belfast, a situation which he occupied till his death. In 1848-50 appeared his *Romance of the Peerrage*; in 1851 his *Outlines of the History of the English Language*, which has passed through various editions, and in 1856 his essays on *The English of Shakespeare*, which passed through several editions. His *Manual of English Literature* was reprinted (1910) in "Everyman's Library."

CRAIK, JAMES (1731-1814). The physician of George Washington, who referred to him as "my compatriot in arms, my old and intimate friend." He was born in Scotland. He accompanied Washington in the Braddock expedition and subsequently entered the medical service of the Revolutionary army and was director of the hospital at Yorktown. He was active in the disclosure of the plot to remove Washington from command during the winter at Valley Forge (see CONWAY, THOMAS) and was present at the surrender of Lord Cornwallis at Yorktown. After the war he settled near Mount Vernon and attended Washington in his last illness.

CRAIK, ROBERT (1829-1906). A Canadian physician and surgeon. He was born in Montreal and was educated at the public schools and McGill University, where he graduated with the highest honors in 1854. He then became house surgeon to the Montreal General Hospital and in 1856 also entered McGill University as demonstrator of anatomy, becoming professor of clinical surgery in 1860. While in this position he distinguished himself for his work in the respec-

tion of joints and for operations in ovariectomy. In 1867-79 he was professor of chemistry. In 1889 he became dean of the medical faculty and from 1889 to 1901 was also professor of hygiene and public health. In addition to his professional work Craik ably assisted in the organization and extension of the medical department during the 17 years that he was dean. He aided in obtaining additional university endowments, in promoting the building and opening of the Royal Victoria Hospital, and in the remodeling of the Montreal General Hospital. As early as 1854 he wrote on the germ theory of infectious diseases. His other publications include: *Papers on Purpura and Tetanus* (1885); *Medical Education* (1890); *Hospital and District Nursing* (1897).

CRAILSHEIM, or KRAILSHEIM, krils'-him. A town of Württemberg, Germany, on the Jagst, 47 miles northeast of Stuttgart (Map. German Empire, D 4). Its municipal offices are situated in the ancient castle of the Hohenlohes; the fifteenth-century church of St. John, a Gothic edifice, contains paintings and other features. It has considerable trade, and manufactures of woollens, cement, leather, lumber, and machinery. It is a centre for agricultural products. Pop., 1900, 5255, 1905, 5747; 1910, 6101.

CRAIOVA, or KRAJOVA, krá-yô'va. The capital of the Province of Doljnu, Rumania, on the river Jiu, 112 miles west of Bucharest (Map: Balkan Peninsula, D 2). It is the centre of a rich agricultural and forest region, and trades in timber, agricultural produce, and cattle. Salt is extensively mined in the neighborhood. It is a garrison town and has large governmental industrial establishments for the manufacture of leather, rope, and carriages. Trade in cattle, cereals, fish, linen, pottery, and glue is important. Being headquarters of the First Army Corps, it has a military training school. It has two old ruined monasteries, Obedeanu and Saint-Démètre. The ancient Roman Castra Nova, in the Middle Ages it became the residence of a ban and the capital of Lower Wallachia. Pop., 1899, 45,438; 1905, 45,756.

CRAIT. See KRAIT.

CRAKE, or CORN CRAKE (from Icel. *kraka*, crow, so named from its cry). An English name for the landrail (*Crex crex*), formed in imitation of its familiar cry, "crek, crek," which is heard from every field of grain in valleys and low grounds in Great Britain in early summer and is associated with all that is pleasant in that pleasant season. It is a very pretty bird, of a reddish-brown color, marked with dark brown in streaks along the middle of the feathers, lighter below. (See Plate of RAILS, etc.) Several other similar short-billed rails of the genera *Crex* and *Porzana* are often termed "crakes," as the spotted crane (*Porzana porzana*), which is smaller than the corn crane and is very similar to the American sora.

CRAKE, AUGUSTINE DAVID (1836-90). An English author. He was educated at London University, entered the ministry of the Church of England, and after holding pastorates at Bloxham and in the Isle of Wight, became vicar of Cholesey, near Wallingford, in 1885, where he remained until his death. He was the author of a number of devotional books and of a long series of historical storybooks, illustrating the history of the Church in England. His works include: *Amilus* (1871); *Evanus* (1872); *Edwy the Fair* (1874; 5th ed., 1885); *Alfgar the Dane*

(1874); *Fairleigh Hall* (1882); *The Last Abbot of Glastonbury* (1884); *Yule-Log Stories* (1887); *Stories from Old English History* (1887). His best-known historical work is a *History of the Church under the Roman Empire* (1873).

CRAKEBERRY. See CROWBERRY.

CRAM, RALPH ADAMS (1863-). An American architect and author, born at Hampton Falls, N. H. He began practice as an architect in 1889. As senior member of the firm of Cram, Goodhue, and Ferguson he helped to plan some of the most notable academic and ecclesiastical buildings in the United States. Among these are: Graduate College and Cleveland Tower, Princeton University; Rice Institute, Houston, Tex.; Richmond and Sweet Briar colleges (Virginia); buildings for Williams College and Phillips Exeter Academy; and St. Alban's Cathedral, Toronto, Canada; St. Paul's Cathedral, Detroit, Mich.; St. Thomas's Church, New York; Calvary Church, Pittsburgh, Pa.; Euclid Avenue Presbyterian Church, Cleveland, Ohio; Fourth Presbyterian Church, Chicago, Ill. He became consulting architect for the Cathedral of St. John the Divine, New York City, and, in 1914, professor in Massachusetts Institute of Technology. His writings include: *Church Building* (1901); *The Ruined Abbeys of Great Britain* (1905); *Impressions of Japanese Architecture and the Allied Arts* (1906); *The Gothic Quest* (1907).

GRAMBE. See SEA KALE

CRAMER, krä'mër, GABRIEL (1704-52). A Swiss mathematician. He was born in Geneva and was subsequently professor of mathematics there. His chief work is a treatise on algebraic curves (Geneva, 1750), but he contributed to the subject of equations (q.v.), revived the study of determinants (q.v.), which had been begun by Leibnitz, and wrote on the physical cause of the spheroidal shape of the planets and the motion of their apsides (Paris, 1730). He also edited the works of Johann Bernoulli (4 vols., Lausanne, 1742) and Jakob Bernoulli (2 vols., Geneva, 1744). In his investigation of curves Cramer generalized the problem of Pappus, to inscribe in a given circle a triangle whose sides produced shall pass through three collinear points; proved Newton's rule for determining the infinite branches of a curve, and completed the classification of cubic curves. Consult Cantor, *Geschichte der Mathematik* (Leipzig, 1898), and Muir, *Theory of Determinants in the Historical Order of its Development* (London, 1890). See CURVE.

CRAMER, JOHANN ANDREAS (1723-88). A German preacher and poet, born in Jöhstadt, Saxony. He studied theology in Leipzig, and in 1750 became chief court preacher in Quedlinburg. In 1754 the influence of his friends Klopstock and Bernstorff secured for him an appointment to a similar position in Copenhagen, where he became professor of theology. Owing to the antagonism of Struensee, he was banished, and accepted an appointment as superintendent in Lübeck, whence he was recalled to Denmark after Struensee's execution in 1772, and appointed professor of theology and chancellor at the University of Kiel (1774). As a preacher he was unexcelled in his day, and his odes and hymns were very popular. Many of them, such as "Er ist gekommen her," "Dein bin ich, Herr," and "Der Herr ist Gott und Keiner mehr," are still frequently sung in the Prot-

estant churches of Germany, and some have been translated into English. A hymnal he edited in 1780 remained in use for a century. His collected poems were published under the respective titles, *Sämtliche Gedichte* (1782) and *Hinterlassene Gedichte* (1791). Consult Blumcke, *Beiträge zur Kenntnis der Lyrik Johann Andreas Cramers* (Greifswald, 1910).

CRAMER, JOHANN BAPTIST (1771-1858). A German pianist and composer. He was born in Mannheim, but in his infancy went to London with his father, the violinist Wilhelm Cramer, who was also his first teacher. Having completed his studies under Clementi, he appeared in public with great success at the age of 17, and after a concert tour in 1788-91 settled in London as a teacher. He repeatedly traveled on the Continent, and from 1832 lived in Paris, whence he returned to London in 1845. He was much admired as a pianist for his correct technique and sympathetic interpretation, his numerous compositions for the pianoforte are now antiquated, with the exception of the *Eighty-Four Studies, Op. 50*, which in their rare combination of superior technical requirements with the highest musical value have become an accepted classic and are used in the entire musical world as models of fundamental studies for the acquirement of solid and tasteful pianoforte playing.

CRAMER, JOHN ANTONY (1793-1848). An English classical scholar, born at Mitlödi, Switzerland, of German parentage, and educated at Christ Church, Oxford. He was professor of modern history at Oxford from 1842 until his death, and during the last four years of his life was also dean of Carlisle. The following are a few of his principal works: *Dissertation on the Passage of Hannibal over the Alps* (in collaboration with H. L. Wickham; 2d ed., 1828), an important work; *Anecdota Græca e Codicibus Manuscriptis Bibliothecarum Ozoniensium Descripta* (4 vols., 1835-37); *Catenæ Græcorum Patrum in Novum Testamentum* (8 vols., 1838-44).

CRAMER, krä'mër, KARL EDUARD (1831-1901). A Swiss botanist, born in Zurich. He studied there and in Freiburg, taught for several years at the technological institute of Zurich, and in 1861 was appointed professor of botany at the Polytechnicum. In 1880 he became professor in the university there, and in 1882 was made director of the botanic garden in Zurich. His published works include the following: *Pflanzenphysiologische Untersuchungen*, jointly with Nägeli (1855-58); *Untersuchungen über die Ceramiceen* (1863); *Bildungsabweichungen bei einigen wichtigeren Pflanzenfamilien* (1864). He was also the author of a number of important monographs on botanical subjects, published in scientific periodicals.

CRAMP (OHG. *chrampfa*, Ger. *Krampf*, cramp, from OHG. *krampf*, curved, Icel. *krappr*, narrow; connected also with AS., OS. *crumb*, OHG. *krump*, Ger. *krumm*, crooked). An irregular, involuntary, and generally painful contraction of a voluntary muscle, without insensibility or other disturbance of the general system. Cramp is often the effect of cold, and has proved fatal to swimmers by attacking them suddenly when in the water. It is readily removed by warmth and friction, when due to a strained position, to cold, or prolonged contraction of a group of muscles, as in lifting a weight above the

head. A swimmer attacked with cramp in the legs should turn on his back and, while floating, grasp and knead the affected muscles violently. Cramps are a distressing symptom in cholera (q.v.). They occur in colic (q.v.), in tetanus (q.v.), and in some cases of poisoning. Writers' cramp is an "occupation neurosis" (q.v.) consisting of a spasmodic closure of the hand on attempting to write, which turns the pen over and prevents its moving. Telegraphers, brakemen on railroads, ballet dancers, cigar makers, glass blowers, violinists, clarinet and cornet players, and many others suffer from a cramp in the group of muscles which they use constantly in their occupations.

CRAMP, CHARLES HENRY (1828-1913). An American shipbuilder, born in Philadelphia. He became a partner in, and later president of, William Cramp & Co., the largest shipbuilding enterprise in the United States, which has built many of the finest naval and merchant vessels afloat. He built ironclads and monitors for the United States government in the Civil War and assisted in the reconstruction of the United States navy and the reestablishment of the United States merchant marine. The destroyed battleship *Maine* was built at the Cramp yards, in whose 31 acres of ground nearly 6000 workmen are employed. Consult Buell, *Memoirs of C. H. Cramp* (New York, 1906).

CRAMPEL, KRÄN'PEL', PAUL (1863-91). A French traveler in Africa. He first went to the French Congo in 1886 as secretary to Savorgnan de Brazza, and in 1888-89 conducted most successfully an expedition from the Ogowe River into the Fan country north and back to Corisco Bay. In the following year he was commissioned by the Comité de l'Afrique Française to penetrate to Lake Chad, and started from Stanley Pool with a small force of 30 Senegalese soldiers and 250 carriers and accompanied by three Europeans. Having marched under great difficulties from Bangui on the Ubangi River northward to El Kuti, he was abandoned by his carriers, and, while trying to force their way farther north, he and his remaining companions were surprised and massacred by the Senussi Moslems. Only one European escaped to bring the news to the Congo (July, 1891).

CRAMP'FISH' (so called from the temporary paralysis caused by its shock). The electric ray. See TORPEDO.

CRAMPTON, CHARLES ALBERT (1858-). An American chemist, born at Davenport, Iowa. He received his education at the University of Michigan, became assistant chemist in the United States Department of Agriculture in 1883, and, seven years later, was made chemist and in 1893 chief chemist to the Internal Revenue Bureau. In 1910 he became chief of the division of food and drugs products. He carried out a number of investigations in agricultural chemistry and published memoirs and reports on special topics of the chemistry of food and agricultural products, including the composition of plant tissues, the composition of butter and other fats, etc. He contributed to the first edition of the *NEW INTERNATIONAL ENCYCLOPEDIA*.

CRAMPTON, HENRY EDWARD (1875-). An American zoologist, born in New York City. He was educated at the College of the City of New York and at Columbia College, where he was an assistant in biology in 1893-95, and to which, after one year as instructor in the Mas-

sachusetts Institute of Technology, he returned to be fellow, lecturer, and instructor in zoology; adjunct professor in 1901-04, and thereafter professor. He was a member of scientific expeditions to the islands of the South Pacific Ocean in 1906, 1907, 1908, 1909, and to British Guiana and the interior of Brazil in 1911. Besides his monographs in scientific publications he is author of *The Doctrine of Evolution* (1911; 2d ed., 1912).

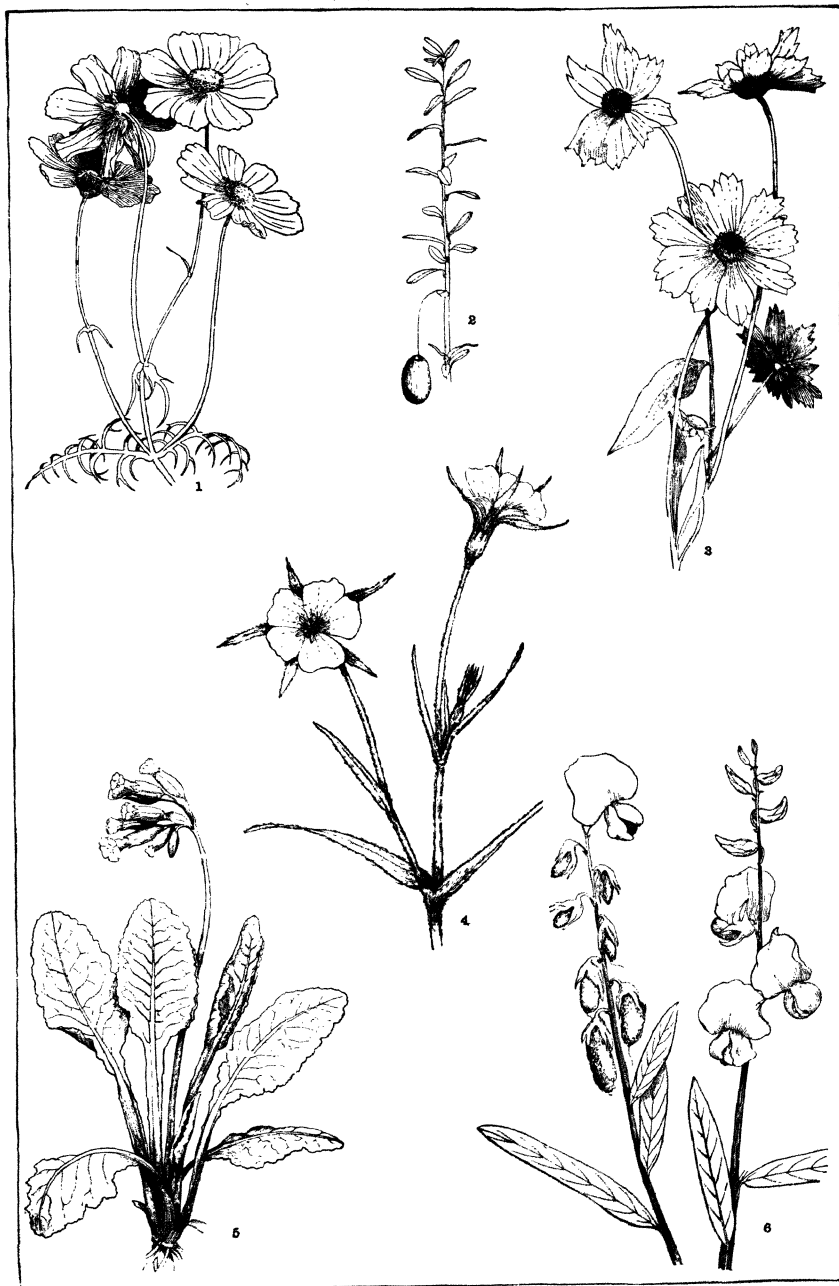
CRAMPTON, THOMAS RUSSELL (1816-88). An English railway engineer. He was born in Kent and was educated by private tutors. Entering the engineering profession, he early turned his attention to locomotive and railway building. In 1843 he designed and patented the locomotive known by his name, which won him the cross of the French Legion of Honor from Napoleon III in 1855. His best-known work was the successful laying of the telegraphic cable from Dover to Calais in 1851. He also constructed the Smyrna Railway, the Varna Railroad in Bulgaria, various lines in England, and the Berlin Water Works.

CRANACH, KRÄ'NÄG, LUCAS THE ELDER (1472-1553). A German painter of the Renaissance. He was born at Cronach in Upper Franconia. There is much dispute in regard to his family name; according to Schuchardt, on Cranach's own testimony, it was Müller, others say Sunder. Cranach was a pupil of his father, and in 1504 became court painter to Frederick the Wise, Elector of Saxony, at Wittenberg, by whom he was held in high repute. His office included the duties of master of ceremonies at court, and besides this he found time for different business ventures at Wittenberg. In 1519 he was elected chairman of the town council; he became burgo-master in 1537 and again in 1540. Cranach was in equal favor with the two following Electors of Saxony, and for two years remained with John Frederick during his imprisonment. He died at Weimar, Oct. 16, 1553.

Cranach has been called the painter of the Reformation, because of his active part in spreading its doctrines. This he did by means of paintings and woodcuts ridiculing the Pope and explaining the teachings of the reformers, and by his numerous portraits of Luther (see Plate of LUTHER) and Melancthon, who were both his personal friends. Because of this activity and also on account of his great productiveness he became the controlling influence in the art of middle and northern Germany and founded what may be called the Saxon school. He painted with great facility—in fact, the inscription upon his gravestone gives him the title of "celerimus pictor." His early paintings were carefully executed, but in later life he did much negligent work. He paid great attention to detail, for which reason his smaller pictures were more attractive. His color was bright and clear, but his drawing was deficient, and he failed utterly whenever he attempted to represent the nude on a large scale. His work was always original, and though we see the influence of the Renaissance in his mythological subjects, his art was thoroughly German and national. It was, moreover, naïf and rich in fantasy, being best wherever there was a chance for genre.

Cranach's works survive in large numbers, especially in the German galleries. But he is trusted so much to his large school of pupils that it is difficult to decide how much is actually

CRANBERRY ETC.



1. COSMOS (*Cosmos tenuifolius*).
2. CRANBERRY (*Vaccinium macrocarpon*).
3. COREOPSIS (*Coreopsis lanceolata*).

4. CORN COCKLE (*Lychnis githago*).
5. COWSLIP (*Primula veris*).
6. SUNN HEMP (*Crotalaria juncea*).

due to him. Among his best works are the "Repose in Egypt" (1504), now in the Berlin Museum; "Christ Blessing the Children," in the Baring collection in London; "Samson and Delilah," in the Museum of Augsburg, and the "Fountain of Youth," in the Berlin Museum. All of these pictures possess a charming naïveté. Of his larger religious paintings, good examples are the "Marriage of St. Catharine," in the cathedral of Erfurt, of his earliest period, and his last great work, the "Crucifixion," in the town church of Weimar. This depicts the object of the Reformation, quaintly introducing the figures of Luther and of Cranach himself. His best works are probably his portraits, for in these the detailed execution is more appropriate. But even here he falls far short of the strength of character of Dürer and Holbein. Among the best are "Cardinal Albrecht of Mainz as St. Jerome," in the Berlin Museum; John Frederick of Saxony, in Dresden; and an "Unknown Female" (No. 291), in the National Gallery, London. Cranach was also an excellent painter of miniatures, as may be seen in the album of the University of Wittenberg, now at Halle, and especially in John Frederick's "Book of Tourneys," now at Coburg, a work of 144 leaves. He also executed a few copperplates and a large number of drawings for woodcuts.

Consult: Schuchardt, *Cranach des älteren Leben und Werke* (Leipzig, 1851-71); Dodgson in *Bibliothèque des bibliographes critiques* (Paris, n. d.); Flechsig, *Tafelbilder Lucas Cranaches des Älteren; Cranach Studien* (Leipzig, 1900); also the monographs by Heller (Bamberg, 1844), Warnecke (Gorlitz, 1879), Lindau (Leipzig, 1883), and Michaelson (ib., 1902).

CRANACH, LUCAS (1515-86) THE YOUNGER. A German painter, the second son and pupil of the preceding. His works are hard to distinguish from his father's and are often assigned to him. His coloring is brighter than his father's, and his drawing is worse. A number of his authentic works are in the Dresden Gallery, including "Elijah and the Priests of Baal," "Hercules with the Pygmies," and a portrait of Elector Maurice of Saxony and his wife. A portrait by him of "An Unknown Woman" is in the Boston Art Museum.

CRANBERRY (from *crane* + *berry*). A name given to the fruit of a few creeping, vine-like species of the genus *Vaccinium*, family Ericaceæ. The smaller cranberry (*Vaccinium oxycoccus*) grows wild in the peaty bogs and marshlands of the temperate and colder regions of both Europe and America. The larger cranberry (*Vaccinium macrocarpum*) is native in similar situations in the United States and is extensively cultivated for commercial purposes in Massachusetts, New Jersey, Wisconsin, and a few other Northern States. The cranberry is a firm, red, acid berry, of good keeping quality, and is used for sauce, tarts, and the like. In the improved commercial culture of cranberries natural swamps or bogs are selected which can be drained by open ditches and flooded when desired. The native moss and swamp growth are removed, and the peat covered 2 to 4 inches deep with sand. The vines are planted about 14 inches apart, cuttings 6 to 8 inches in length being used. The sand keeps down the weeds, makes cultivation easy, and helps retain the moisture in the soil below. Additional sandings are given every four or five years, which keep the vines short and close. In some localities

sanding is omitted altogether. The object of flooding is to protect the vines in winter and from early fall and late spring frosts, to destroy insects, prevent drought, and protect against fire. The berries are gathered preferably by hand, but often with special rakes and combs. There are three principal types of cultivated varieties, determined by the form of the berries—bell-shaped, bugle-shaped, and cherry-shaped—with many varieties of each. Over 1,000,000 bushels of cranberries are marketed in the United States annually.

The cowberry, or mountain cranberry (*Vaccinium vitis-idaea*) is common in both Europe and America, and, like *Vaccinium oxycoccus*, is gathered and sold in considerable quantities, but is not cultivated. The shrub *Viburnum opulus* is known as the high-bush cranberry. The fruit is tart, but is of little value and is seldom eaten. The Tasmanian cranberry is the fruit of *Astroloma humifusum*, of the family Epacridaceæ. Consult Corbett, "Cranberry Culture," *Farmers' Bulletin*, No. 176, United States Department of Agriculture (Washington, 1903); *Year Book of the Department of Agriculture* (Washington, 1911).

CRANBERRY DISEASES. The scald and spot are the most serious fungus troubles of the cranberry, the names being derived from the appearance of the fruit. They are of fungus origin; the scald is due to *Guignardia vaccinii* and the spot to *Pestalozzia guepinii vaccinii* and may be recognized by the appearance of soft spots on one side of the berry. The skin becomes tense and of a reddish-brown color. Later the berry becomes shriveled and may or may not fall to the ground. Distinct brownish spots may also be seen on the leaves. The diseases are most troublesome in hot moist seasons, and the most satisfactory treatment, where it can be followed, is to cover the bog with a thin layer of sand, which can best be done when the bog is flooded, and spraying with Bordeaux mixture, to which is added a resin-fish oil mixture. These diseases have been known to destroy more than half the berries on a bog in a short time. A gall-producing fungus, *Synchytrium vaccinii*, is common on the cranberry and related plants. The presence of the fungus on the leaves and other parts of the plant causes the formation of red galls. Burning over the bog in autumn is recommended as a preventive means, since the spores are ripened the second year. Common and conspicuous malformations of leaves, flowers, and young shoots of the cranberry are due to *Exobasidium vaccinii*. The parts attacked are swollen and the green color replaced by rose or red. This disease is seldom severe. Consult Shear, "Cranberry Diseases," *United States Department of Agriculture, Bureau of Plant Industry, Bulletin* 110 (Washington, 1907).

CRANBERRY INSECTS. The worst enemies of the cranberry are two moth caterpillars—the black-headed fireworm (*Rhopobata vacciniana*), which defoliates the bushes, and a spanworm (*Acrobasis vaccinii*), which attacks the fruit. For the first, Prof. J. B. Smith, author of a treatise on "Insects Injurious Affecting Cranberries," in *Special Bulletin K, New Jersey Agricultural College Experiment Station* (New Brunswick, N. J., 1890), recommends re-flooding the land and application of kerosene or Paris green; for the second, Paris green or London purple applied after the leaves are mostly gone and the berries are set. A scale, a leaf

hopper, and certain locusts and crickets are also harmful. Consult Franklin, "How to Fight Cranberry Insects," *Bulletin 126, Massachusetts Agricultural Experiment Station* (Amherst, 1908).

CRANBROOK. A town in the Kootenay valley between the Selkirk and Rocky Mountains, Kootenay District, British Columbia, Canada. It is a divisional point on the Crow's Nest branch of the Canadian Pacific Railway, 35 miles west (direct) of Fernie, and is about 330 miles east (direct) of Vancouver (Map: British Columbia, F 5). It is in a rich fruit-growing, agricultural, and mining region, and is the geographical and distributing centre of the south-east part of Kootenay District. Its growth dates from 1901. The principal public edifices are the provincial buildings, and it contains a high school and a manual training school. The manufacturing industries include sash and door factories, saw and planing mills, brickworks, aerated-water works, and foundries. Pop., 1911, 3090.

CRANBROOK, GATHORNE GATHORNE-HARDY, first EARL of (1814-1906). An English statesman, born at Bradford. He was educated at Oxford (B.A., 1836), studied law, and was appointed Undersecretary of State for the Home Department in 1858, two years after his election to Parliament. In 1865 he was again elected to Parliament as the representative of the University of Oxford, defeating Gladstone. In 1867-68 he was Home Secretary and was subsequently Minister of War (1874-78), Secretary of State for India (1878-80) under Lord Beaconsfield, and Lord President of the Council under the Marquis of Salisbury (1885 and 1890-92). He was raised to the peerage in 1878 as Viscount Cranbrook and was created Baron Medway in 1892. He was a strong churchman. Consult the *Memoir* (London, 1910) by A. E. Gathorne-Hardy.

CRANCH, CHRISTOPHER PEARSE (1813-92). An American artist and poet, born at Alexandria, Va. He studied theology at Cambridge, Mass., and became a Unitarian clergyman. In 1842 he retired from the ministry. He associated himself with the Transcendentalists, and wrote verse for *The Dial*, but in 1846 went to Europe to study art, remaining there until 1863. He returned to America in 1864, but after 1871 devoted himself wholly to literature, to which he had already contributed *Poems* (1844), two juveniles, *The Last of the Huggermuggers* (1856), and *Koboltzoo* (1857). His later works include notably *The Bird and the Bell*, with other poems (1875), and *Ariel and Caliban* (1887). He was a man of genuine culture, who, growing up in the midst of more gifted spirits, failed to make a deep impression upon his generation.

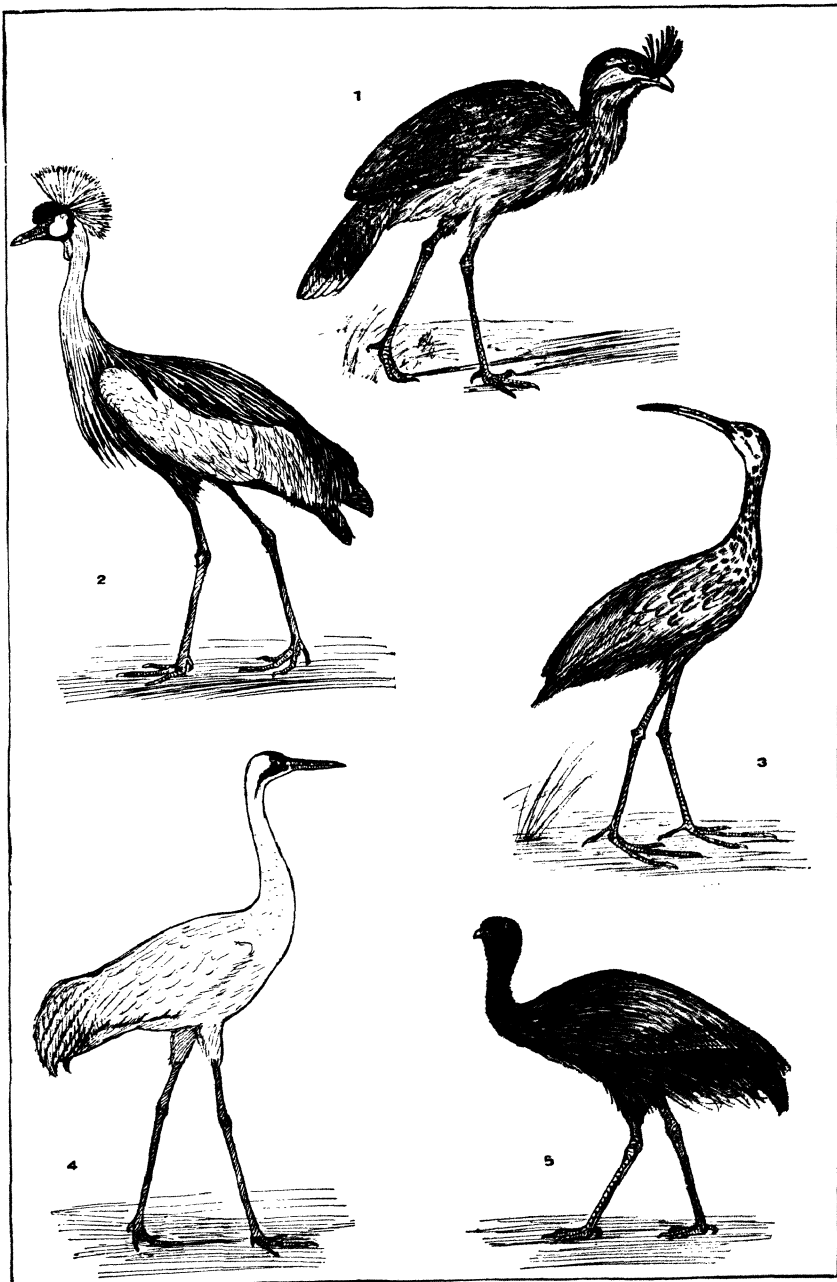
CRANCH, WILLIAM (1769-1855). An American judge, born at Weymouth. He graduated at Harvard, and was admitted to the bar in 1790. In 1801 he was appointed a justice of the United States Circuit Court for the District of Columbia and in 1805 was made Chief Justice, and this office he held until his death. He published *Reports of Cases in the United States District Court of the District of Columbia* (1801-41) and the *Supreme Court Reports* (1800-15).

CRANDALL (PHILLEO), PRUDENCE (1803-90). An American educator and philanthropist. She was born at Hopkinton, R. I., of Quaker parentage; was educated at the Friends' School in Providence, R. I.; taught for a time at Plainfield, Conn., and in 1831 established a private

school for girls in Canterbury. Early in 1833 she admitted a colored girl into the school and thereby aroused the violent opposition of her neighbors. This led her to abandon her original plan and to open her school unreservedly to "young ladies and little misses of color." Accordingly she issued an announcement to that effect in the *Liberator* of March 2 and early in April received 15 or 20 colored pupils. Her neighbors then began a systematic course of persecution and endeavored by boycott, insult, and abuse, and by enforcement of an obsolete vagrancy law, to break up the school. Public meetings were called, petitions were circulated, and on May 24 the celebrated "Black Law" of Connecticut was passed forbidding any one to "set up or establish in this State any school, academy, or literary institution for the instruction or education of colored persons who are not inhabitants of this State," or to instruct or teach in any such school. For refusing to obey this law Miss Crandall was arrested, was imprisoned in the Canterbury jail, and in October was convicted, though the Court of Errors reversed the decision of the lower court on a technicality, in July, 1834. Soon afterward Miss Crandall's house was assaulted and partially destroyed, and she finally decided to abandon her project. The whole affair attracted much attention throughout the country and served to intensify the conflict between the abolitionist and anti-abolitionist elements among the Northern people. A short time after giving up her school Miss Crandall married the Rev. Calvin Philleo, and passed the rest of her life in New York, Illinois, and Kansas. Consult May, *Recollections of the Anti-Slavery Conflict* (Boston, 1869).

CRANE. The largest of the wading birds (Grallæ). They constitute the family Gruidæ, which occupies a very distinctive position between the trumpeters and the rails, being connected with the latter by the limpkins, or Aramidæ. All are tall, long-legged, long-necked birds, with the head more or less naked, but sometimes tufted, rather long, straight, compressed beaks, short but powerful wings, short tails, the feet unwebbed, and the hind toe greatly elevated, they are like herons in appearance, but resemble rails in structure. One remarkable feature is the enormous development of the windpipe within the keel of the breastbone, where it is coiled and twisted before emerging into the neck; the extreme development of this is found in our American whooping crane, where the trachea reaches 4 or 5 feet in length in old age (it is perfectly straight and simple at birth), and the convolutions act like those of a French hunting horn in producing the extraordinary resonance of tone for which the voice of this species (see *IRIS*) is noted. About 18 species of crane are known, representing three genera and all parts of the world except South America and the Malayan and Polynesian archipelagoes. The best known, perhaps, is the European crane, which is about 4 feet high, ashy gray, with a blackish face and throat. The tertial feathers of the wings are so prolonged as to droop over the quills; their webs are fibrous and disconnected; and formerly they were much used as ornamental plumes. This peculiarity characterizes most other species to a greater or less extent, and some species have the power to elevate these plumes at will, forming a striking ornament. All the cranes of the temperate zone migrate,

CRANES, ETC.



1. SERIEMA (*Seriema cristata*).
2. CROWNED CRANE (*Balearica pavonina*).
3. LIMPKIN (*Aramus vociferus*).
4. WHOOPING CRANE (*Grus americana*).
5. TRUMPETER (*Psophia crepitans*).

some going annually to the far north to breed; and the coming of flocks in the spring, always in a V-formation, and the extraordinary "dances" with which some accompany courtship, have been observed for centuries and have caused a large body of myth and folklore to grow up about the bird during classical and mediæval times. On this point, consult C. de Kay, *Bird Gods* (New York, 1898).

The remote breeding of the European crane (*Grus grus*) in Lapland and along the northern border of Russia was little known until the mystery was solved by J. Wolley in 1853, who discovered among other new facts that the young run about as soon as they leave the egg, and that the sitting bird would not carry away eggs that had been handled, as had been commonly believed. The birds make their nests on the ground in the marshy plains that border the Arctic Sea. The whole account (*Ibis*, London, 1859) is exceedingly interesting, and is largely quoted by Stejneger in the *Standard Natural History*, vol. iv (Boston, 1885). Other cranes of the Old World are the northwest African crowned or Balearic crane (*Balearica pavonina*), which has a topknot like that of a peacock; and the smaller Numidian crane or demoselle (*Grus virgo*), which in summer resides and breeds from Turkey eastward to China, and which is the one most famous for its dancing. The Manchurian crane (*Grus japonensis*, or *viridirostris*) is especially common in winter in Korea, where it is trapped in large numbers and sold to the Chinese and Japanese, who are especially fond of it and endow it with many folklore qualities. The large Australasian crane (*Grus australasiana*) is one of the most conspicuous birds of that region and is known to the Australians as "native companion" because of its friendly disposition. It will sometimes follow the plowman, picking up the insects he turns out of the soil. Consult Blyth, *Natural History of the Cranes* (London, 1881), and Blaauw, *A Monograph of the Cranes* (Leiden and London, 1897).

American cranes are of three species. The greatest is the whooping crane (*Grus americana*, or *Limnogeryon americanus*), which is larger than the European crane and is seldom seen except on the Western plains, where it has become rare. In fact, it may be wholly extinct at present, as none have been seen for several years. There are a few living in zoological gardens. Two others are also species of the Western interior and are diminishing in numbers; one is the sand-hill crane (*Grus mexicana*), and the other the little brown crane (*Grus canadensis*)—both until recently regarded as one species. Consult Coues, *Birds of the Northwest* (Washington, 1874). See Plate of CRANES, ETC.

CRANE (AS. *cran*, *cornoch*, OHG. *cranuh*, *cranth*, Ger. *Kranich*, crane; connected with Welsh, Corn., Bret. *garan*, Ochurch Slav. *zheravi*, Lith. *gérve*, GK. *γέρανος*, *geranos*, crane; so called from the resemblance of the arm of the machine to the neck of the bird). A term used in applied mechanics to designate a hoist which can also move the load in a horizontal or lateral direction. Cranes are divided into two classes, as to their motions—viz., rotary and rectilinear—and into four groups as to their motive power—viz., hand, when operated by manual power; power, when driven by power derived from line shafting; steam, electric, hydraulic, or pneumatic, when driven by an engine or motor attached to the crane, and operated by steam, elec-

tricity, water, or air transmitted to the crane from a fixed source of supply; locomotive, when the crane is provided with its own boiler or other generator of power and is self-propelling, usually being capable of both rotary and rectilinear motion. Rotary and rectilinear cranes are thus subdivided: (1) swing cranes, having rotation but no trolley motion; (2) jib cranes, having rotation and a trolley traveling on the horizontal jib; (3) column cranes, identical with the jib crane, but rotating around a fixed column, which usually supports a floor or roof above; (4) derrick cranes, having the head of the mast held in position by gny rods, instead of by attachment to a roof or ceiling, and a boom whose outer end is raised and lowered from the top of the mast to secure the radial motion of the load; (5) pillar cranes, having rotation only, the pillar or column being supported entirely from the foundations; (6) pillar jib cranes, identical with the last, except in having a jib and trolley motion; (7) walking cranes, consisting of a pillar or jib crane mounted on wheels and arranged to travel longitudinally upon one or more rails; (8) locomotive cranes, consisting of a pillar crane mounted on a truck, and provided with a steam engine capable of propelling and rotating the crane and of hoisting and lowering the load; (9) bridge cranes, having a fixed bridge spanning an opening and a trolley moving across the bridge; (10) tram cranes, consisting of a truck or short bridge, traveling longitudinally on overhead rails and without trolley motion; (11) traveling cranes, consisting of a bridge, traveling longitudinally on overhead tracks, and a trolley moving transversely on the bridge; (12) gantries, consisting of an overhead bridge carried at each end by a trestle traveling on longitudinal tracks on the ground, and having a trolley moving on the bridge; (13) rotary bridge cranes, combining rotary and rectilinear movements and consisting of a bridge pivoted at one end to a central pin or post and supported at the other end on a circular truck, provided with a trolley moving on the bridge.

Cranes are built of wood and iron, but at the present time cast iron and steel are employed nearly exclusively. Hand cranes are employed for handling comparatively light loads, and the manual power is usually applied by means of a crank or cranks operating a windlass, around the drum of which the hoisting rope is wound and unwound. For heavy loads some form of mechanical power is always employed, which is applied through a suitable train of mechanism for performing the various movements of hoisting, rotation, and horizontal travel. A great variety of such mechanisms are in common use for each of the principal kinds of motive power, and for details the reader should consult special treatises on hoisting machinery and the catalogues of manufacturers. Cranes are built with capacities of from a few hundred pounds to as much as 150 tons. The traveling crane in the gun shop at the Washington navy yard has a capacity of 150 tons; the span of the bridge is 59½ feet; the maximum travel of the trolley lengthwise of the bridge is 44 feet 2 inches, and its traveling speed is from 25 to 50 feet per minute; the effective lift is 40 feet, with four speeds of hoist; the speed of travel of the bridge is from 30 to 60 feet per minute.

The Finnisston Quay, at Glasgow, Scotland, is equipped with a pillar crane of 150 tons' capacity. The jib is formed of two steel tubes,

each 39 inches in diameter and 90 feet long; the radius of sweep for heavy lifts is 65 feet; the jib and its load are counterbalanced by a weight of 100 tons; and in a test a 130-ton load was lifted at a rate of 4 feet per minute, and a complete revolution was made with this load in five minutes. The floating crane at Cramp's shipyard, in Philadelphia, Pa., has a steel mast 116 feet high and 3 feet in diameter, carrying a horizontal jib 65 feet long with a counterbalance arm 50 feet long which is stayed to the bottom of the mast and to the hull of the barge. The barge is 69 feet long, 62 feet wide, and 13 feet deep. This crane has a lifting capacity of 125 tons. A floating crane owned by the Chapman Wrecking Company, of New York City, has a mast 92 feet high and a jib 98 feet long, and is capable of lifting a load of 265 tons.

Shears, or shear legs, is a type of crane for shipyard use, in which a long boom made of two converging members is pivoted at the bottom on the ground, and carries the pulley or hoisting purchase at its upper end. It has a small horizontal range by reason of the in-and-out swing of the long-legged boom, but considerable vertical range. It is used for placing boilers and engines in the hulls of vessels.

On board ship cranes are fitted for handling cargo, coal, boats, anchor, etc. The boat crane of a large modern man-of-war is built up, box-girder fashion, it rises 20 or 25 feet above the skid beams on which the boats are stowed, and extends 10 or 15 feet beyond the ship's side when turned out for the purpose of lowering or hoisting a boat. The power is either electricity or steam and serves to hoist and lower the boat, run it in or out on the horizontal arm of the crane, or train (i.e., turn horizontally) the latter (consult, Glynn, *Treatise on the Construction of Cranes and Other Hoisting Machinery* (London, 1887); Marks, *Notes on the Construction of Cranes and Lifting Machinery* (ib., 1889); and Towne, *A Treatise on Cranes* (New York, 1883). See DERRICK; ELEVATOR.

CRANE, BRUCE (ROBERT BRUCE) (1857-) An American landscape painter. He was born in New York, Oct. 17, 1857, and studied there under Alexander Wyant and later in Europe. His landscapes are idyllic in character and show the influence of the painters of Barbizon. They are veracious but highly poetical interpretations of commonplace nature, treating such subjects as broad stretches of plowed or snow-covered fields, finely modulated in color and often of a rich golden color. Good examples are, "Autumn Uplands" (Metropolitan Museum, New York), "Autumn" (National Gallery, Washington); "March" (Brooklyn Museum); "Springtime" (Peabody Institute, Baltimore); "The Hills," awarded the Saltus prize (National Academy); "Autumnal Hills" and "Indian Summer" (1912); "Grey Morning" and "Golden Afternoon" (1913). He was elected a member of the National Academy of Design (1901) and of the American Water Color Society and received numerous medals and prizes.

CRANE, FRANK (1861-). An American clergyman and author, born in Urbana, Ill., and educated at Illinois Wesleyan University. He was ordained to the Methodist Episcopal ministry in 1882 and preached in Chicago Methodist churches from 1896 to 1903, when he entered the Congregational ministry. From 1904 to 1909 he was pastor of the Union Congregational Church of Worcester, Mass., and then devoted

himself to authorship. He wrote articles for syndicated newspapers, daily and weekly, and for women's monthlies, on subjects of contemporary interest, and published in book form: *The Religion of Tomorrow* (1899); *Vision* (1907); *The Song of the Infinite* (1909); *Human Confessions* (1911); *God and the Democracy* (1911); *Lame and Lovely* (1912).

CRANE, ICHABOD. The hero of the adventure with the Headless Horseman, in Irving's "Legend of Sleepy Hollow," in *The Sketch Book*.

CRANE, STEPHEN (1870-1900). An American journalist and novelist, born at Newark, N. J. He was educated at Lafayette College and Syracuse University; began active life as a reporter and newspaper writer, was correspondent for the *New York Journal* in the Greco-Turkish War (1897) and in Cuba, and then removed to England. His first essay in fiction was a story of slum life, *Maggie, a Girl of the Streets* (1891). This was followed by a collection of verses, *The Black Riders and Other Lines* (1895). *The Red Badge of Courage* (1896), a realistic though imaginary presentation of horrors in the Civil War, brought him deserved reputation. Less significant are: *George's Mother* (1896); *The Little Regiment* (1897). *The Open Boat* (1898); *Whilomville Stories* (1900), and other tales, although in such a short story as *The Master* he showed that he still possessed great power. Posthumous manuscripts have been collected by his wife under the title *Wounds in the Ram* (1900) and *Great Battles of the World* (1900). In 1903 appeared *O'Ruddy*, written in collaboration with Robert Barr.

CRANE, THOMAS FREDERICK (1844-). An American folklorist and educator, born in New York. He graduated in 1864 at Princeton, was appointed professor of modern languages at Cornell, and in 1868 professor of the Romance languages. In 1902 he became dean of the general faculty of the university, and in 1909 professor emeritus. His researches in the history of the development of European folklore are especially valuable. His works include: *Italian Popular Tales* (1885); *The Exempla, or Illustrative Stories from the Sermones Vulgares of Jacques de Vitry* (1890). *Chansons populaires de la France* (1891); *Tableau de la révolution française* (6th ed., 1892). He also edited *Le romantisme français* (1887, 5th ed., 1907).

CRANE, WALTER (1845-1915). One of the foremost English illustrators, also a painter, decorator, and writer. He was born in Liverpool, Aug. 15, 1845, received instruction from his father, Thomas Crane, a miniature painter, and afterward studied wood engraving under Linton in London. Although influenced by the Pre-Raphaelite painters, Rossetti, Holman Hunt, and Millais, he was largely self-taught. During his travels in Italy in 1871 and 1888 he was strongly influenced, especially in his painting, by the early Florentines, above all by Botticelli. He is, however, preeminently an illustrator, who has popularized Morris's ideas of bookmaking, and on the Continent he, rather than William Morris, is considered the leader of the Romantic movement in British decorative art. Like Morris, he also seeks to identify art with Socialism and to introduce it into social and domestic life. He is perhaps best known for his illustrations—mostly of juvenile books—published in collaboration with Edmund Evans, contributing largely in reforming the artistic conception of decorative illustration. His drawings, executed

in a kind of antique style, mostly in outlines, are full of imagination, charm, and humor, and show complete mastery of the medium. Among the best are: "The Baby's Opera" (1877); "Pan Pipes" (1882); Grimm's Household Tales (1882); "Echoes from Hellas" (1888); "Flora's Feast"; "Queen Summer" (1889); Shakespeare's Works (1883-94), and Spenser's Faerie Queene. As a painter, he is classed with the Pre-Raphaelites (q.v.). Among his best-known paintings are: "The Birth of Venus" (1877, Tate Gallery); "The Chariot of the Hours" (medal at Munich, 1895); "Mask of the Four Seasons" (1905); "Prometheus Unbound" (1906); portrait of himself in the Uffizi Gallery (1912). He is also known as a designer for glass windows, tapestries, wall paper, and the like, and as a writer, with pedagogical intent, upon subjects of general artistic interest. He received many medals and was chosen president of the Arts and Crafts Society of London. Consult the monographs by Von Berlepsch (Vienna, 1897) and Schleinitz (Bielefeld, 1902), and Konody, *The Art of Walter Crane* (London, 1902).

CRANE, WILLIAM HENRY (1845-). An American comedian. He was born in Leicester, Mass., and was educated in the Boston schools. In 1863, after some amateur experience, he made his debut at Utica, N. Y., with the Holman Opera Company, taking the part of the notary in Donizetti's *Daughter of the Regiment*. In 1870 he became a member of the Alice Oates Company, with which he remained for four years. In 1874 he played at Hooley's Theatre in Chicago, filling the leading comedy rôles, and later he acted in San Francisco for nearly a year. Returning East, he made his first marked success with Stuart Robson (1877), at the Park Theatre, New York City, in Grover's farcical play *Our Boarding House*. Among their other successes were those in the *Comedy of Errors* and *The Henrietta* (1889), after which he separated from Mr Robson. His subsequent plays include *The Senator, The American Minister; On Probation; A Fool of Fortune; A Virginia Courtship* (1898); *David Harum* (1900); *Business is Business* (1905); *She Stoops to Conquer* (1906-07); *Father and the Boys* (1907); *The Senator Keeps House* (1911); *The New Henrietta*, a revision of *The Henrietta* (1914).

CRANE, WINTHROP MURRAY (1853-). An American politician and a manufacturer, born in Dalton, Mass., and educated in the public schools. In 1897 he was elected Lieutenant Governor of Massachusetts, and in 1900 Governor. From 1892 to 1900 and from 1904 to 1912 he was a member of the Republican National Committee. He was appointed to fill the vacancy in the United States Senate caused by the death of Senator Hoar in 1904 and later was elected for the term ending in 1913, when he retired from public life.

CRANE FLY (so called from its long legs). A big, slender-bodied fly of the family Tipulidae, having excessively long, slender legs. These flies appear, often in swarms, in late summer, and about 300 of the 1000 or more known species belong to the United States. Their modes of life and reproduction are not well known. "The larvæ of most species," according to Howard, "live in the earth, but some live in water, in decomposing wood, and even upon the leaves of plants. Some of the earth-inhabiting forms destroy grass and grain by injuring the roots. . . The wings of the crane flies are generally clear,

but are sometimes beautifully marked and spotted." See DADDY LONGLEGS.

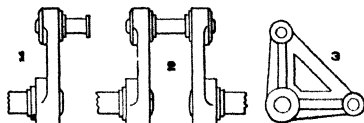
CRANE'S-BILL. See GERANIUM.

CRANIAL INDEX. See ANTHROPOMETRY; INDEX, CEPHALIC.

CRANIOMETRY (from Gk. *cranium*, *kranion*, skull + *metron*, measure) and **CRANIOLOGY.** Systematic measurement and comparison of human crania. See ANTHROPOMETRY.

CRANIUM. See SKULL.

CRANK. A mechanical device consisting of a bend or arm on an axle or shaft by which reciprocating motion is converted into rotary motion. The reciprocating motion of the piston rod of a steam engine is converted into rotary motion of the engine shaft by means of a crank. The crank may consist of an arm on the end of a shaft or of a similarly located disk with a crank pin, or of a U-shaped bend in the shaft between the ends. The piston rod transmits its



CRANKS

1, single crank at end of an axle, 2, double crank in the middle of a shaft, 3, bell crank

motion to the crank by means of an intermediate connecting rod. The connecting rod exercises the maximum force on the crank arm when this arm is at right angles to the line of motion of the connecting rod, and it exercises no force tending to produce rotation when the crank arm is parallel to the line of motion of the piston rod. Maximum force occurs at two points in the rotation of the crank, and no force occurs at two points nearly at right angles to the points of maximum force. The two points of no force are called the "dead points"; and in order to carry the crank shaft past these dead points, where only a single crank is used, the shaft is provided with a heavy flywheel, the momentum of which supplies the necessary power to keep up rotation when the connecting rod is not supplying power. When two connecting rods are connected with the shaft by separate cranks, the two crank arms may be set at right angles to each other, so that one rod is exerting its maximum force while the other is at the dead points of the revolution.

CRANMER, THOMAS (1480-1556). Reformer of the English church and the first Protestant Archbishop of Canterbury. He was born at Aslacton, in the County of Nottingham, on July 2, 1489. In his fourteenth year he went to Jesus College, Cambridge, of which he was elected a fellow in 1510, but lost his position temporarily by marriage, being reelected on his wife's death. In 1523 he took his degree of D.D. and was appointed lecturer on theology. In 1529, during the prevalence of the sweating sickness in Cambridge, he retired with two pupils to Waltham Abbey; and Henry VIII, in company with Gardiner and Fox, afterward bishops of Winchester and Hereford, happening to be in the neighborhood, the event proved a turning point in the life of Cranmer. The King was then taking steps to secure his divorce from Catharine of Aragon, and in conversation on the subject with Gardiner and Fox, Cranmer suggested that if the

universities could be induced to declare that, in their opinion, the first marriage was unlawful, the King would be free to marry again. Henry was greatly pleased with this idea, and is said to have sworn, "by the Mother of God, that man hath the right sow by the ear." Cranmer was asked to reduce his suggestion to writing and to have it submitted to the European universities. After this he was appointed archdeacon of Taunton and one of the royal chaplains. He was also sent to Rome on a special embassy in the matter of the divorce, but met with little success. Subsequently he was dispatched to the Emperor Charles V on the same errand; and while in Germany he married a second time, a niece of the German divine Osiander. Shortly afterward, on the death of Archbishop Warham, he was recalled to fill the vacant see of Canterbury. He was consecrated Archbishop March 30, 1533. Under his auspices Henry's divorce was speedily carried through the Archbishop's Court at Dunstable, and on May 28 he announced the legality of the King's marriage to Anne Boleyn, which had taken place four months before. In Anne's subsequent disgrace, and again in the affair of Anne of Cleves, the Archbishop took a part not very creditable to him. His position was no doubt a difficult one; but his character was naturally pliable and timid rather than resolved and consistent. The same spirit characterizes the measures of religious reform which were promoted by him. On the one hand he joined actively with Henry in restricting the power of the Pope, though he seems to have had less to do with suppressing the monasteries; but, on the other hand, he was no less active in persecuting men like Frith, Forrest, and others, who on matters of religious faith were disposed to advance further than himself or the King. The key to the dilemma probably lies in Cranmer's idea of the royal supremacy. To his mind the power of the King in ecclesiastical affairs was absolute, and the duty of the Archbishop was to carry out the views of his royal master. Hence his advocacy of the "via media" under Henry, his advanced Protestantism under Edward VI, and, perhaps, his recantations under Mary. He did what he could, however, to resist the reactionary movement which took place in 1539, and which is known by the institution of the *six articles*. He was also instrumental in promoting the translation and circulation of the Scriptures. On Henry VIII's death Cranmer was appointed one of the regents of the kingdom and, along with Latimer and others, largely contributed to the advance of the Protestant cause during the reign of Edward VI. He assisted in the compilation of the service book and the articles of religion. The latter are said to have been chiefly composed by him. He was also the author of four of the homilies.

On the accession of Mary he was committed to the Tower, together with Latimer and Ridley. In March, 1554, they were removed to Oxford and confined there in the common prison, called the "Boycardo." Latimer and Ridley bore their cruel fate with magnanimous courage; but the spirit and principles of Cranmer temporarily gave way under the severity of his sufferings. He was induced to sign no fewer than seven recantations, though there is no ground for supposing that a hope of pardon was held out to him. On March 21, 1556, he suffered martyrdom, as his fellow reformers had done, opposite Balliol College. His courage returned at the end,

and he showed an unexpected fortitude in the midst of the flames.

Cranmer's principal writings have been edited by Jenkyns, *Remains of Archbishop Cranmer* (Oxford, 1833), and by Cox, for the Parker Society, under the titles *Writings and Disputations Relative to the Lord's Supper* (Cambridge, 1844) and *Miscellaneous Writings and Letters* (ib., 1846). Additional material is to be found in the appendix of Strype, *Memorials of Thomas Cranmer* (Oxford, 1848-54), and his *Ecclesiastical Memorials* (ib., 1822); in Nichols, *Narratives of the Reformation*, Camden Society, from the papers of John Foxe (London, 1859); but above all in Brewer and Gardner, *Calendars of Letters and Papers, Foreign and Domestic, of the Reign of Henry VIII* (ib., 1862-80). Among older works, consult: Foxe, *Acts and Monuments* (ib., 1877); Burnet, *History of the Reformation* (New York, 1842); and the *Lives* by Todd (London, 1861) and Le Bas (ib., 1833). More recent works are: Dean Hook, "Thomas Cranmer," in his *Lives of the Archbishops*, N. S. (ib., 1868); Green, *History of the English People*, vol. ii (New York, 1879); Froude, *History of England*, vols. i-vi (ib., 1870); Pollard, *T. Cranmer and the English Reformation, 1489-1856* (London, 1904).

CRANNOGS, or CRANNOGES (Ir. *crannog*, Gael. *crannag*, pulpit, top of a mast, from Ir., Gael. *crann*, tree, Welsh *prenn*, Corn. *pren*, tree; probably connected with Gk. *κράνον*, *kranon*, Lat. *cornus*, cornel tree, Lith. *kirna*, OPruss. *kirno*, shrub). Ancient lake dwellings of Ireland and Scotland. Usually the dwellings were extended into villages, often occupying islands, they were analogous to the lake dwellings (q.v.), or palafittes, of Switzerland, and to types of structure still existing in various regions. Commonly they were supported wholly or in part on piles set in the lake bottom and were connected by platforms. The type persisted in Ireland from an early prehistoric period, when stone implements were used, until the present millennium. The later examples were built by means of bronze and even iron tools, which are sometimes found in the ruins. The refuse heaps below the ancient structures are rich sources of relics, indicating the industrial and artistic status of the builders, their food habits, domestic and game animals, etc. Historical references to the structures began with the earliest Irish annals, about the ninth century, and continued until the middle of the seventeenth century. The archæologic survey and excavation of the ruins began in 1839, when Wilde explored a crannog in Lake Lagore, County Meath. Consult: Wilde's *Catalogue of the Museum of the Royal Irish Academy*; Munro's *Lake-Dwellings of Europe: Ancient Scottish Lake-Dwellings, or Crannogs, etc.*; Reeve's "Crannogs in Antrim and Derry," in *Ulster Journal of Archaeology* (Belfast, 1903-04); Arcy's "Account of the Excavations of Two Lake Dwellings," in *Journal of Royal Society of Antiquaries of Ireland* (Dublin, 1900).

CRANSTON. A residential city in Providence Co., R. I., including several villages, on the New York, New Haven, and Hartford Railroad, and on Providence River (Map: Rhode Island, C 2). Within the precincts of the town are four village libraries, State reformatories for boys and girls, the State prison, almshouse, insane asylum, and workhouse. The principal industries are market gardening, brewing, dairying, and the manufacture of cotton and print

goods, tubing, and wire. The government is administered by a mayor and city council. Cranston, settled in 1638, was set off from Providence and incorporated as a town in 1754 and as a city in 1910. It receives its water supply from Providence. Pop., 1900, 13,343; 1910, 21,107.

CRANSTON, EARL (1840-). An American Methodist Episcopal bishop, born at Athens, Ohio. After graduating at Ohio University in 1861, he entered the Ohio infantry, served until 1864 in it and the West Virginia cavalry, and was advanced to the rank of captain. He was ordained to the ministry in 1867, held various charges, and was publishing agent of the Methodist Episcopal church from 1884 to 1896, when he was elected bishop. In 1904 he became Resident Bishop of Washington. In 1898-1900 he made a tour through China, Japan, and Korea.

CRANTOR (Lat., from Gk. Κράτωρ, *Krator*). A Greek academic philosopher, who flourished about 300 B.C. He was born at Soli, in Cilicia. He was the first commentator on Plato and wrote among other works, *Περὶ Πένθους*, *Peri Penthus*, *On Affliction*, a letter of condolence to a friend on the death of his children, praised by Cicero, *Academica*, ii, 135, as "a book not large, but golden, and to be learned by heart to the last word." Cicero used the treatise in writing his *De Consolatione*; parts of it appear, too, in Plutarch's *Consolatio ad Apollonium*. Consult Kayser, *Dissertatio de Crantore Academico* (1841); Buresch, "Consolationum a Graecis Romanisque scriptarum Historia Critica," in *Leipziger Studien*, ix (1886). Ritter and Preller, *Historia Philosophiae Graecae* (9th ed; Gotha, 1913).

CRANWORTH, ROBERT MONSEY ROLFE, BARON (1790-1868). An English jurist, born at Cranworth, Norfolk. He was educated at Cambridge, was called to the bar in 1816, and was a member of Parliament and Solicitor-General from 1832 to 1839, when he became a Baron of the Exchequer. In 1851 he was raised to the peerage, and in the following year was chosen Lord Chancellor in Lord Aberdeen's cabinet. He resigned in 1858, and again occupied the post in 1865-66. Consult J. B. Atlay, *Lives of the Chancellors*, vol. ii (London, 1908).

CRAPAUD, κρά'π'δ', JEAN, or JOHNNY. An English nickname for a Frenchman, from the popular belief that all Frenchmen were frog eaters, *crapaud* meaning a 'frog or toad.'

CRAPE (Fr. *crêpe*, OF. *crepe*, crinkled, from Lat. *crispus*, crisp). A thin fabric made of raw silk which has been tightly twisted, without removing the viscous matter with which it is covered when spun by the worm. It is simply woven as a thin gauze, then dressed with a thick solution of gum, which in drying causes the threads partially to untwist, and thus gives a wrinkled and rough appearance to the fabric. It is manufactured both in black and colors. Black crape is usually worn as mourning apparel, a use of the material which originated at Bologna, Italy. The Japanese and Chinese crapes are often white or highly colored and sometimes are adorned with ornamental designs. Crape cloth is made to imitate the silk fabric by passing a form of woolen cloth through rollers which impart the crinkled surface.

CRAPE MYRTLE. See *LAGERSTREEMIA*.

CRAPPIE (possibly connected with Fr. *crabe*, crab fish). A sunfish (*Pomoxis annularis*) of the rivers of the Mississippi valley and Alleghenies, a food fish resembling in appear-

ance and habits the calico bass. Also called "bachelor," "new light," "Campbellite," etc. See *Plate of BASS*.

CRAPS. A game of chance, played by any number of persons with two dice. The person holding the dice "shoots." Should his first throw be 2, 3, or 12, it is "craps," and he loses; should he shoot 7 or 11, he wins. Should he throw any other number, then he continues to "shoot" until he throws that number again and wins, or 7 and loses.

CRAPSEY, ALGERNON SIDNEY (1847-). A former American Protestant Episcopal clergyman, born in Hamilton Co., Ohio. He prepared for the ministry at St. Stephen's College, Annandale, N. Y., and at the General Theological Seminary, where he graduated in 1872. He was ordained to the priesthood in 1873, and in 1874 was placed on the permanent staff of Trinity Church, New York, from which he resigned in 1879 to accept the rectorship of St. Andrew's Church, in a newly organized parish in Rochester, N. Y. In 1906 Dr. Crapsey was tried by an ecclesiastical court of his diocese, found guilty of heresy, and deposed, for heterodox views in sermons in 1904-05 denying the doctrine of the virgin birth of Christ, and the resurrection and ascension of the literally physical body of Christ, though he had admitted the spiritual verity of the resurrection. In 1907 he founded in Rochester a brotherhood. His publications include: *The Five Sorrowful Mysteries* (1883); *The Five Joyful Mysteries* (1885); *A Voice in the Wilderness* (1897); *Religion and Politics* (1905), containing the "heretical" sermons; *The Rebirth of Religion* (1907).

CRASHAW, RICHARD (c.1613-49). An English poet. He was the son of a clergyman in the English church and was educated at the Charterhouse and at Cambridge, where he obtained a fellowship in 1637. In 1643 he was ejected from his fellowship by the Parliament for refusing to take the covenant. He went to France, adopted the Roman Catholic faith, and suffered great pecuniary distress, until, through Cowley's influence, he was introduced to Queen Henrietta Maria, who recommended him to Cardinal Palotta at Rome. The Cardinal made him an attendant, and afterward subcanon in the church of Our Lady of Loretto. Just after this latter appointment Crashaw died, Aug. 25, 1649. In 1634 Crashaw published a volume of Latin poems, in which appeared the famous line on the miracle at Cana, *Nympha pudica Deum vidit et erubuit* ('The modest water saw its God and blushed'). In 1646 appeared a volume of poems in two parts, one containing religious and the other secular poems, under the titles (abbreviated) *Steps to the Temple* and *The Delights of the Muses*. Another (third) edition, with additions, was published in Paris in 1652. This volume is ornamented with 12 vignette engravings, drawn by Crashaw himself. Later editions of Crashaw are by W. D. Turnbull (1858); A. B. Grosart (1872, with supplement in 1888); and A. R. Waller, "Poems," in *Cambridge English Classics* (1908).

CRASIS. See *ORTHOGRAPHY, FIGURES OF*.

CRASSUS, LUCIUS LICINIUS (140-91 B.C.). A Roman orator, who excelled all others of his time. In 95 B.C. he was elected consul, with Quintus Mucius Scaevola (who had been his colleague in all his previous offices). During their consulship was enacted the *Lex Licinia Mucia de Civibus Redigunda*, banishing from

Rome to their own cities all freemen who had not the full rights of citizens. This embittered the feelings of foreigners towards Rome and partly led to the Social War. As censor (92 B.C.) he closed all the schools of the rhetors, asserting that they exercised a bad influence on the minds of young men. He died in consequence of the excitement attending a debate in the Senate. Crassus is one of the chief speakers in Cicero's *De Oratore*, representing Cicero's own point of view. Consult the Introduction to Wilkins's edition of that work, 8-13 (2d ed., Oxford, 1888).

CRASSUS, MARCUS LICINIUS (c.115-53 B.C.). A Roman triumvir. He was a zealous partisan of Sulla, and rendered him efficient service in the battle at the Colline Gate (q.v.), 82 B.C., which sealed the fate of the Marians. As praetor he crushed the revolt of the gladiators under Spartacus in 71 B.C., and in the following year was made consul with Pompeius, a colleague whom he hated. On the other hand, Caesar valued the friendship of Crassus, the most wealthy of Roman citizens. During his consulate Crassus gave a feast to the people, which was spread on 10,000 tables, and distributed grain for three months. Plutarch estimates the wealth of Crassus at more than 7000 talents, and Pliny states that his lands were worth 8000 talents. In 60 B.C. Caesar, Pompeius, and Crassus entered into the first triumvirate (See **CÆSAR**). In 55 B.C., as consul with Pompeius, he obtained the Province of Syria, and professed to make preparations of war against the Parthians; but the acquisition of more wealth seems to have been his main object, and thus he effected by plundering the towns and temples in Syria. At length, however, he undertook a campaign in 54 B.C., after which he returned to Syria. In the following year he set out again, but was misguided by a treacherous Arab, and utterly defeated at the river Bilechas by the Parthians. Crassus now retreated to the town of Carhæ, intending to pass into Armenia, but was beguiled into a conference with the Parthian general, Surenas, and was slain at the appointed place of meeting. His quaestor, Cassius, with 500 cavalry, escaped into Syria; but the remaining Romans were scattered and made prisoners or put to death.

CRATEGUS (Neo-Lat., from Gk. *κράταγος*, *kratagos*, a kind of thorn). A genus of plants of the family Rosaceæ, very nearly allied to *Mespilus* (medlar) and *Pyrus* (pear, apple, etc.). The species, which are difficult of limitation, are natives of the temperate parts of the Northern Hemisphere, being well represented in North America, and in general have flowers in beautiful terminal corymbs. They are all large shrubs or small trees, more or less spiny; hence the name "thorn" has been very generally applied to them. The only native of Great Britain is the common hawthorn (q.v.) (*Cratægus oxyacantha*). Most of the species resemble it in habit, size, form of leaf, etc. A number of species are now frequent in plantations and shrubberies. Of these, perhaps the most common is the cockspur thorn (*Cratægus crus-galli*), a native of North America from Canada to South Carolina. Its leaves are not lobed; its fruit is rather larger than that of the hawthorn. The azarole (*Cratægus azarolus*), and the aronia, a native of the south of Europe and of the Levant, are occasionally cultivated for their fruit, which is about the size of the Siberian crab and is used either for dessert or for pies. *Cratægus*

orientalis and *Cratægus tanacetifolia* have also fruit of considerable size. The latter is much eaten in Armenia. *Cratægus mexicana* has a large, but inedible, apple-like fruit. It is, however, very ornamental. After the cockspur thorn, the best known of the American species are probably the scarlet thorn (*Cratægus coccinea*), Washington thorn (*Cratægus cordata*), *Cratægus douglasii*, and *Cratægus punctata*. The wood of most of the species much resembles that of the hawthorn. It is common to graft the rarer species on the hawthorn.

CRATCH CRADLE (from OF. *creche*, Ger. *Krippe*, crib), also called CAT'S CRADLE and SCRATCH CRADLE. A childish game played by two persons holding an endless string symmetrically in the fingers of the two hands, and taking it off each other's hands so as to form a new pattern at once.

CRATCH'TT, BOB. The father of Tiny Tim in Dickens's *Christmas Carol*—a good-hearted little man, the poorly paid clerk of the miserly Scrooge.

CRATER. See VASE.

CRATER (Lat., from Gk. *κράτηρ*, *kratēr*, mixing bowl, from *κεραυνίω*, *kerannynai*, to mix). The bowl-shaped or conical cavity through which materials are ejected during a volcanic eruption. At the bottom the crater communicates by a pipe or chimney with the heated interior of the earth. When of small size a volcano usually erupts through a single crater at the summit, but, as the mountain mass increases by accumulation of material, the lava may find lines of lesser resistance through fissures in the sides. In this way subsidiary craters are formed, one of which in the course of time may become the principal crater, or they all may be buried beneath the renewed outpourings of the primary crater. The Peak of Teneriffe has a number of minor funnels on its sides and summit. In volcanoes of an explosive type the whole top of the mountain may be blown off during an eruption, forming an immense crater, within which subsequently new cones may arise in concentric arrangement. This structure, called "cone-in-cone," is shown by Vesuvius, whose active crater is partially encircled by a rampart (Monte Somma) many miles in diameter. Volcanello of the Lipari Islands has three craters on the summit. The craters of extinct or dormant volcanoes are sometimes filled with water, and thus are formed crater lakes. Many of the beautiful lakes of Italy and the well-known Crater Lake of Oregon originated in this way. See **VOLCANO**.

CRATER, THE. A novel by James Fenimore Cooper (1847), describing a Utopian settlement on the Pacific coast.

CRATER LAKE. See **CRATER LAKE NATIONAL PARK**.

CRATER LAKE NATIONAL PARK. A United States government reservation in the Cascade Mountains, in Klamath Co., Oreg., created by an Act of Congress approved May 22, 1902 (Map: Oregon, C 5). It has an area of 249 square miles. Its principal feature is Crater Lake, lying in the crater of an extinct volcano which destroyed what geologists believe to have been a mountain more than 16,000 feet high, perhaps the loftiest peak on the western coast of what is now the United States. The lake is in about the centre of the park, is approximately 6 miles long by 4 miles wide, and has a water surface of 20½ square miles. The nearly perpendicular walls of the great caldera in which

the lake lies tower from 500 to 2000 feet above its surface, which is 6177 feet above sea level. Soundings have been taken showing a depth of 2001 feet. It was discovered in 1853 by John Hillman, the leader of a party of gold hunters, and was known to United States army officers and enlisted men as early as 1865, but not to the general public until about 1885, since when its remarkable beauty and the majestic grandeur of the surrounding landscape have attracted thousands of tourists to its shores. In 1913 the park contained two hotels (one on the rim of the lake and the other 5 miles distant), and a telephone service connected various buildings within the reserve. Several wagon roads are maintained, and these means of communication are being increased and improved. All hunting is forbidden within the reserve, but fishing is permitted, and the lake contains an abundance of rainbow trout, with which it has been stocked by the government. There are no other fish in the lake, and none in the other waters of the reserve. Consult Diller, *Geological History of Crater Lake, Oregon*, pub. by the Department of the Interior (Washington, 1912).

CRATERUS (Lat., from Gk. Κρατῆρός, *Kratēros*). A favorite general of Alexander the Great. He commanded a division of the royal bodyguard in the Asiatic campaigns, and was sent to Macedonia as regent in 323 B.C. After the death of Alexander, Craterus received, jointly with Antipater, the government of Macedonia, Greece, Illyria, and Epirus, Antipater taking command of the military forces and Craterus attending to civil affairs. He formed an alliance with Antigonus (q.v.) against Perdiccas and invaded Asia with an army, but was defeated and slain by Eumenes in Cappadocia (321 B.C.).

CRATES, krá'téz (Lat., from Gk. Κράτης, *Kratēs*). An Athenian comic poet of the fifth century B.C. He began his career as an actor in Cratinus' plays, and won his first victory in 449 B.C. Aristotle says that he was the first Attic poet to give up personal satire in comedy; he likewise made the innovation of introducing a drunken character on the stage. We have the titles of 15 plays and scanty fragments. Consult Kock, *Comicorum Atticorum Fragmenta* (Leipzig, 1880).

CRATES. A cynic philosopher of Thebes, of the fourth century B.C. Scorning the large property which he inherited, he moved to Athens and became an eager disciple of Diogenes and one of the most eminent of the Cynics. He was an excellent orator and skillful poet. As the teacher of Zeno, the founder of Stoicism, Crates formed the link between Cynicism and Stoicism. Interesting fragments of his poetry have been edited by Bergk, *Poeta Lyrici Graeci* (Leipzig, 1882). Diogenes Laertius states that he wrote letters and tragedies on philosophic subjects. The 36 letters which bear his name are, however, generally thought to be spurious. They are edited by Hercher, *Epistolographi Graeci* (Paris, 1873). Consult also Zeller, *Philosophie der Griechen*, vol. i (Tubingen, 1892).

CRATES OF MALLOS. A Greek grammarian and Stoic of the second century B.C., head of the Pergamene Library and the chief opponent of Aristarchus. He devoted himself to the interpretation of Greek authors, especially of Homer; he likewise defended the grammatical theory of anomaly in opposition to the Alexandrian doctrine of analogy. (See **ANOMALISTS AND ANALOGISTS**.) He enlarged and catalogued the Per-

gamene Library; his work on the Attic dialect was much employed by later grammarians. About 167 B.C. he was sent by King Attalus on an embassy to Rome, where he introduced the study of formal grammar. Consult: Suetonius, *De Grammaticis*, 2; Wachsmuth, *De Cratete Mallota* (Leipzig, 1800); Susemihl, *Geschichte der griechischen Literatur in der Alexandrinerzeit*, vol. ii (ib., 1892); Sandys, *A History of Classical Scholarship*, vol. i (2d ed., Cambridge, 1906).

CRATINUS (Lat., from Gk. Κρατινος, *Kratinos*) (?-c.421 B.C.). An Athenian comic poet. He was born in the latter part of the sixth century B.C., and was one of the seven poets of the Old Comedy named in the Canon Alexandrinus (q.v.). He first presented a comedy in 453; in all he left 21 plays, with which he had won nine victories. He was among the first to give comedy a political turn. By the introduction of a third actor he placed comedy on a level with tragedy. A follower of Cimon and the Conservative party, he sharply attacked Pericles in two plays, in his *Ἀρχιλόχοι*, *Archilochoi*, he represented a contest of poets which may well have been Aristophanes' model in his *Frogs*. Aristophanes defeated Cratinus in 425 with his *Acharnians*, and in 424 with the *Knights*. In the parabasis of the latter play he refers to his elder rival as "an ancient ruin," "a doting drunkard," whereupon Cratinus retorted in 423 with his *Wineflask*, which won the first prize over Aristophanes' *Clouds*. The 400 fragments of his work then known were collected by Kock, *Comicorum Atticorum Fragmenta*, vol. i (Leipzig, 1880). In the *Oxyrhynchus Papyri*, vol. iv (1904), appeared the newly discovered argument of a play, *Dionysalexander*, of which nine fragments had been known, though they did not reveal the plot, on this consult Körte, *Hermes* (1904), and Morgan, *Addresses and Essays*, 25-33 (New York, 1910).

CRATIPPUS (Κράτιππος, *Kratippus*). An Athenian historian, of the fourth century B.C., of whom very little is known. He has gained importance in recent times because of an historical fragment discovered by Grenfell and Hunt, and published by them in *Oxyrhynchus Papyri*, v (1907-08). The fragment, which has come to be known as the *Hellenica Oxyrhynchia*, has been ascribed to Cratippus by various scholars. Consult Hunt, in *The Year's Work in Classical Studies* (London, 1908). The present tendency is to ascribe the work rather to some one other than Cratippus. Consult Walker, *The Hellenica Oxyrhynchia: Its Authorship and Authority* (Oxford, 1913). See **EPHORUS**.

CRATIPPUS (Lat., from Gk. Κράτιππος, *Kratippus*). A Peripatetic philosopher. He was a native of Mitylene and a contemporary of Cicero. He appears to have been held in the highest estimation by the great men of his age. Cicero calls him the prince of all the philosophers whom he had known. Cratippus accompanied Pompeius in the latter's flight after the defeat at Pharsalus, and conferred upon him the consolations of philosophy; and Brutus went to Athens, where Cratippus had lately settled, to listen to his lectures even while making preparations to meet Octavius and Antonius. Nothing that Cratippus wrote has survived.

CRAUK, krá'uk', GUSTAVE ADOLPHE DÉSIRÉ (1827-1905). A French sculptor, born in Valenciennes. He was a pupil of Pradier, Ramey, and Dumont, and won the Prix de Rome in 1851. His

works are to be found in many of the public buildings and churches of Paris and the provinces. They include the monument to Admiral Coligny (1889), before the Oratory in the Rue de Rivoli, Paris; the tomb of Cardinal Lavignier in Carthage (1900); and the ideal works "Youth and Love" (Luxembourg) and "Omphale" in the courtyard of the Louvre. He was one of the most popular portrait sculptors of the Second Empire, and among his sitters were the Empress Eugénie (1863), Marshals McMahon and Niel (1861), General Gallifet, and Casimir Périer.

CRAVEN, ALFRED WINGATE (1810-79). An American civil engineer, born in Washington, D. C. He was appointed engineer commissioner to the Croton Water Board in New York City in 1849, and his connection with that board was notable for the number and value of the works which he projected and superintended. Among these were the Central Park Reservoir, completed in 1867, the reservoir at Boyd's Corners, and the survey of the Croton valley. The establishment of the sewerage system of New York is largely due to his endeavors. He was president of the American Society of Civil Engineers in 1870-71.

CRAVEN, ELIJAH RICHARDSON (1824-1908). An American clergyman, born in Washington, D. C. He graduated at the College of New Jersey (later Princeton University) in 1842 and at Princeton Theological Seminary in 1848 and became a trustee of the former (1859) and a director of the latter (1865). In 1878-84 he was chairman of the committee to revise the Book of Discipline of the Presbyterian church, and he was moderator of the General Assembly in 1885. He was president of the board of directors of the Newark German Theological Seminary, Bloomfield, N. J., in 1889-1902, and for more than 30 years (1854-87) was pastor of the Third Presbyterian Church in Newark, N. J. In 1887-1904 he was secretary of the Presbyterian Board of Publication and Sabbath School Work. He revised (1874) Moore's translation of Lange's *Commentary on Revelation*.

CRAVEN, ELIZABETH BERKELEY, LADY. See ANSPACH, MARGRAVINE OF.

CRAVEN, PAULINE DE LA FERRONAYS, MADAME AUGUSTUS (1820-91). A French religious romancer, born in Paris. She is best known for her *Histoire d'une sœur* (1866), an idyllic picture of an aristocratic Roman Catholic French family and of the slow passing away, through consumption, of a simple-minded, noble, and deeply religious woman. Madame Craven's father was at one time French Ambassador to Berlin. In 1834 she married an Englishman, Augustus Craven, a descendant of the famous Margravine of Anspach, he is known only through his *Le prince Albert de Saxe-Cobourg, époux de la reine Victoria* (1883). She traveled widely, and after marriage lived much in England, writing articles on English politics, and biographical sketches of *Sister Nathalie Narishkin* and of *Lady Georgiana Fullerton*, as well as *Reminiscences of England and Italy*. She died in Paris, April 1, 1891. Her novels have been as popular perhaps in English translations as in the original. The best are *Anne Sererin*, *The Enigma's Answer*, and *Fleurange*, in all of which she pleads persuasively the cause of Roman Catholicism and seeks in emotional ecstasy the only life that seems to her worth the living. To some her books will seem morbid, to others strong, but her fervid spirit appeals to all.

Consult Mary Bishop, *Memoir of Mrs. Craven* (London, 1894), and J. F. A. Smith, *The Life and Literary Works of Mrs. Augustus Craven, née de la Ferronnays* (Nürnberg, 1910).

CRAVEN, THOMAS TINGEY (1808-87). An American naval officer, born in Washington, D. C. He entered the navy in 1822, took part in the capture of the pirate *Federal* in the West Indies in 1828, and commanded Captain Wilkes's flagship in the Antarctic exploring expedition in 1838. He was commissioned captain in 1861, commanded the Potomac flotilla, and in the same year took part in the capture of New Orleans and the operations on the Mississippi. In 1866 he was assigned to the command of the Mare Island Navy Yard and was raised to the rank of rear admiral. He was retired in 1869.

CRAVEN, TUNIS AUGUSTUS MACDONOUGH (1813-64). An American naval officer, brother of Thomas Tinge Craven. He was born in Portsmouth, N. H., entered the navy in 1829, took part in the conquest of California, and in 1857 made a survey of the Isthmus of Darien for a prospective ship canal. He saved the fort at Key West for the United States government at the beginning of the Civil War and was promoted to the rank of commander. While chasing the Confederate ram *Tennessee* in the battle of Mobile Bay, his vessel, the monitor, *Tecumseh*, struck a torpedo and sank, with Craven and nearly every one else on board.

CRAWFISH, or CRAYFISH (OF. *crevice*, *crevasse*, Fr. *écrevisse*, from OHG. *chrebz*, Ger. *Krebs*, crawfish). A fresh-water or terrestrial crustacean (*Astacus fluvialis*), nearly allied to the lobster, from which, however, it differs in having the middle plate of the tail fin transversely divided by a suture. It inhabits the rivers and streams of many parts of Europe, making burrows in clayey banks, and coming forth at night in search of food, which consists chiefly of mollusks, small fishes, larvæ of aquatic insects, and animal substances of almost any kind. It is esteemed for the table, and is readily attracted by a bait of decaying flesh or animal garbage inclosed in a net or in a bundle of twigs, by which many crawfish may be captured at a time. The use of the name has been extended until it is now applied to any of the fresh-water species of the family Astacidae. In the United States it is universally applied to any one of several species of *Cambarus*, which agree very closely in structure and habits with the common crawfish of Europe. They are 6 inches or so in length and of a greenish-brown color. They frequently do much damage to dikes and levees by opening water passages, as told in *Proc. Assoc. Econom. Entomologists* for 1895 (United States Department of Agriculture, 1896). For general facts, consult Huxley, *The Crayfish: An Introduction to Zoology* (London, 1887); "Revision of the Astacidae," *Memoirs Museum Comparative Zoology*, vol. x, No. 4 (Cambridge, Mass., 1885); Sterle, *The Crayfish of Missouri* (Cincinnati, 1902); Fisher, "Crayfish as Crop Destroyers," in *Year Book of the United States Department of Agriculture* (Washington, 1912).

CRAWFORD, ALEXANDER WILLIAM CRAWFORD LINDSAY, EARL OF (1812-80). An English author. After graduating at Cambridge he traveled extensively in Egypt and Asia Minor. He took a considerable interest in astronomical investigations, and the expedition to the island of Mauritius in 1874, to observe the transit of

Venus, was organized by him. For some inexplicable reason his body was stolen shortly after its burial at Dunecht, and was not discovered until about 14 months later in the woods near by. Among his publications are: *Loves of the Lindsays* (1835); *Letters on Egypt, Edom, and the Holy Land* (1838); *Sketches of the History of Christian Art* (3 vols., 1847; 2d ed., 1885); *Argo, or the Conquest of the Golden Fleece*, an epic in 10 books (1876); *The Earldom of Mar* (1882).

CRAWFORD, COE ISAAC (1858-). An American legislator, born near Volney, Iowa. He graduated in 1882 from the law department of the University of Iowa, practiced law for one year in that State and for 15 years in Pierre, S. Dak., was member of the Dakota Territorial Legislature in 1889, and upon the admission of South Dakota into the Union in that year became a member of the first State Senate; was Attorney-General in 1892-96; and, after removal to Huron, S. Dak. (1897), was attorney for the Chicago and Northwestern Railway Company until 1903. In 1907 he was elected Governor of South Dakota on the Republican ticket and in the following year United States Senator for the term expiring March 3, 1915.

CRAWFORD, FRANCIS MARION (1854-1909). An American novelist, chiefly resident in Europe. He was born at Bagni di Lucca, Italy, a son of the sculptor Thomas Crawford. Of cosmopolitan education in America, England, and Germany, his first literary venture was as editor of the *Allahabad Indian Herald* (1879-80). His voluminous fiction was begun by *Mr. Isaacs*, a story of modern India (1882), which promptly brought him a popularity and a fame at home and abroad that its many successors served to widen and make more secure. The more significant of his other works are: *Dr. Claudius* (1883); *A Roman Singer* (1884); *Zoroaster* (1885); *A Tale of a Lonely Parish* (1886); *Saracinesca* (1887); *Paul Potoff* (1887); *Greifenstein* (1889); *Sant' Ilario* (1889); *A Cigarette Maker's Romance* (1890); *The Witch of Prague* (1891); *Don Orsino* (1892); *Pietro Ghisleri* (1893); *The Ralstons* (1894); *Casa Braccio* (1895); *Corleone* (1897); *Via Crucis* (1899); *In the Palace of the King* (1900); *Marietta, a Maid of Venice* (1901); *The Heart of Rome* (1903); *Whosoever Shall Offend* (1904); *Sopano*, a portrait (1905); *Fair Margaret* (1905), and its sequel, *Prima Donna* (1908). The *Saracinesca* series, stories of modern Rome, is generally regarded as his most important performance. His strictly American fiction is less popular. A romantic novelist, Marion Crawford probed no depths of human nature and untangled no complex psychological knots, but he had the beguiling gift of the born story-teller who has also become an accomplished master of the art of fiction. Ingenious plots, a varied company of interesting *dramatis personæ* faithfully studied and freshly portrayed, picturesque settings, and behind all the attractive personality of an intelligent and cultivated man of the world—these and other characteristics explain and fully justify the delight with which, for more than a quarter of a century, an immense audience, American and European, welcomed the annual appearance of one of the long series of his novels. Though his fame rests on his fiction, he showed, in *Ave Roma Immortalis* (1898), *Rulers of the South* (1900), and *Gleanings from Venetian History* (1905), a gift of conjuring up the life of the

Italian past in a manner that makes the spirit and the facts of history as entertaining as a romance.

CRAWFORD, GEORGE WASHINGTON (1708-1872). An American lawyer and statesman. He was born in Georgia, graduated at Princeton in 1820, and in 1822 was admitted to the bar. From 1827 to 1831 he was State Attorney-General, and from 1837 to 1842, with the exception of one year, was a member of the State Legislature. In 1843 he was in Congress, in 1843 and 1845 was elected Governor of Georgia, and from 1849 to 1850 was Secretary of War in President Taylor's cabinet.

CRAWFORD, ISABELLA VALANCY (1851-87). A Canadian poet. She was born in Dublin, Ireland, went to Ontario as a child, and lived at Peterboro and Toronto. She wrote verse showing marked originality and lyrical power, comprised mostly in *Old Spookses' Pass*, *Malcolm's Katie*, and *Other Poems* (1884). Consult the appreciation prefixed to *Poems* (Toronto, 1905, ed. by Garvin) by E. Wetherald.

CRAWFORD, JAMES LUDOVIC LINDSAY, EARL OF (1847-1913). A British astronomer, born at Saint-Germain-en-Laye, France. He was educated at Eton and at Trinity College, Cambridge, and from 1874 to 1880 was a member of Parliament. He was also for a time president of the Astronomical Society. His *Bibliotheca Lindsiana* was published in parts from 1883 to 1913: his philatelic library was bequeathed to the British nation.

CRAWFORD, JOHN WALLACE (CAPTAIN JACK) (1847-). An American author, born in County Donegal, Ireland. He served in the Forty-eighth Pennsylvania Volunteers in the Civil War, and while lying wounded in the hospital at West Philadelphia was taught to read and write by a sister of charity. As a scout he served under General Crook in the Sitting Bull campaign in 1876 and later against the Apaches in New Mexico. In 1886 he retired from the army, was a miner and ranchman in New Mexico, was in the Klondike (1898-1900), and finally became a public lecturer. Besides many poems, several songs, and more than 100 short stories, "Captain Jack" is author of *The Poet Scout—A Book of Song and Story* (1885); *Campfire Sparks* (1888); *Tat*, a drama produced in San Francisco in 1900; *Colonel Bob*, a drama, with Marie Madison (1909); *Whar' the Hand o' God is Seen and Other Poems* (1911).

CRAWFORD, MARY CAROLINE (1874-). An American author, born in Boston. She was educated at Radcliffe College. From 1898 to 1902 she was literary critic of the *Boston Budget* and in 1907-08 was secretary of the Women's Trade Union League; she then became secretary of the Ford Hall meetings. Her publications include: *The Romance of Old New England Rooftrees* (1902); *The Romance of Old New England Churches* (1903); *The College Girl of America* (1905); *Among Old New England Inns* (1907); *St. Botolph's Town* (1908); *Old Boston Days and Ways* (1909); *Romantic Days in Old Boston* (1910); *Goethe and his Woman Friends* (1911; 2d ed., 1913); *Romantic Days in the Early Republic* (1912); *The Romance of the American Theatre* (1913).

CRAWFORD, THOMAS (1813-57). An early American sculptor. He was born in New York, March 22, 1814, and in 1834 he went to Rome, where he studied under Thorvaldsen. He passed much of his life in Rome, where his studio was

the resort of travelers and lovers of art. Although his life was comparatively short, he left many interesting examples of his work, and is justly considered one of the most important pioneers of American sculpture. Judged from the pseudoclassic standpoint of his day, his work ranks high, and it always has a distinct literary and poetic flavor. But it is rarely inspired, and in modeling is cold and hard. The figure of "Liberty" on the dome of the Capitol at Washington, the statue of James Otis in Mount Auburn Cemetery, Cambridge, and the statues of Patrick Henry and Jefferson, belonging to the Washington Monument in Richmond, have originality, strength, and nobility. He was less happily inspired in the main figure of the Richmond monument, an equestrian statue of Washington, and in the pediment and bronze doors of the Senate wing of the Capitol. Other interesting works are the bust of Beethoven, now in Symphony Hall, Boston, the casting of which was enthusiastically celebrated in a great festival in Munich; "The Indian" (New York Historical Society); "Orpheus" (Boston Art Museum); "Adam and Eve after the Expulsion" and a bust of Josiah Quincy (Boston Athenaeum); "The Dancer," "Dying Indian Maiden," and "Flora" (Metropolitan Museum, New York). Crawford executed many bas-reliefs, and 87 of his plaster casts were presented by his wife to the Commissioners of Central Park, who arranged them in a building for public exhibition. They have since been destroyed by fire. Consult Lorado Taft, *History of American Sculpture* (New York, 1903), and Tuckerman, *Book of the Artist* (ib., 1867).

CRAWFORD, WILLIAM (1732-82). An American soldier, born in Berkeley Co., Va. He was for a time assistant surveyor to George Washington, and he served as ensign of Virginia Rifles in the French and Indian War. He accompanied Braddock's luckless expedition against Fort Duquesne in 1755, served through the Pontiac War (1763-64), and in 1776 was appointed lieutenant colonel of the Fifth Virginia Regiment. In 1781 he resigned from the army with the rank of colonel. At the request of Washington and of General Irvine, he assumed command in 1782 of an expedition against the Delaware and Wyandot Indians near the Sandusky River, who had long devastated the frontier. On June 4, on the plains northeast of the present site of Sandusky, he encountered a combined force of about 300 Indians and British soldiers from Detroit. His troops having been discouraged by the accession of reinforcements to the enemy, he ordered a retreat which soon became a confused flight. He was himself separated from the main body, captured by a band of Delawares, and burned at the stake amid fearful torture. Notwithstanding his wholly creditable Revolutionary record, his leadership on this occasion appears scarcely to have been efficient. Consult Butterfield, *Expedition against Sandusky* (Cincinnati, 1873); Roosevelt, *The Winning of the West*, vol. ii (New York, 1896); N. N. Hill, "Crawford's Campaign," in *Magazine of Western History* (Chicago, 1885).

CRAWFORD, WILLIAM HARRIS (1772-1834). An American politician. He was born in Amherst Co., Va., Feb. 24, 1772, but removed with his parents to South Carolina in 1779 and to Georgia in 1783, where in 1798 he was admitted to the bar. In 1802 he was chosen a member

of the State Senate and in 1807 was chosen to fill a vacancy in the United States Senate. During the canvass he fought two duels, in the first of which he killed a man, while in the second he was himself wounded. He was elected to the Senate in 1811 and in 1812 was chosen president pro tempore of that body. He at first opposed, but finally supported, the war with England. In 1813 he was appointed Minister to France, where he became a general favorite and in particular was an intimate friend of Lafayette. In 1815 he was made Secretary of War and the next year Secretary of the Treasury, an office which he retained until 1825. Crawford had been a candidate for the presidential nomination in 1816 and in 1824 thought himself entitled to succeed Monroe as President, and was regularly nominated by the congressional caucus which was then controlled by him; but the caucus system was then temporarily superseded (see CAUCUS), and there were four other candidates against him—Calhoun, John Quincy Adams, Jackson, and Clay. Calhoun was pacified with the vice presidency, to which he was chosen by 182 out of 260 votes. There was no choice for President, the vote being: Jackson, 99; Adams, 84; Crawford, 41; Clay, 37. About the time of the election Crawford was stricken with paralysis, from which he never wholly recovered. His condition rendered it impossible to consider him a candidate when the election came to be decided in the House of Representatives, although, even in such a condition, he received four of the 24 votes. From this time Crawford was out of the political field. He served as judge of the northern circuit of Georgia from 1827 until his death, which occurred Sept. 15, 1834.

CRAWFORD, WILLIAM HENRY (1852-). An American educator, born at Wilton Center, Ill. He graduated at the Northwestern University and the Garrett Biblical Institute and became a minister in the Methodist Episcopal church. He was appointed professor of historical theology in the Gammon Theological Seminary, Atlanta, Ga., in 1889, and in 1893 became president of Allegheny College (Meadville, Pa.). His publications include: *Life of Savonarola* (1906); *The Church and the Slaves* (1908); *Thoburn and India* (1909).

CRAWFORD NOTCH. A defile in the White Mountains, N. H., at an elevation of 1915 feet, between Mount Webster and Mount Willey, each about 4000 feet high. The Saco River, entering through a narrow passage, traverses the Notch, which is remarkable for its impressive rock scenery.

CRAWFORDSVILLE. A city and the county seat of Montgomery Co., Ind., 43 miles west-northwest of Indianapolis, on the Cleveland, Cincinnati, Chicago, and St. Louis, the Vandalia, the New York Central, and the Chicago, Indianapolis, and Louisville railroads (Map: Indiana, C 2). It is the seat of Wabash College, established in 1832, and contains a fine county courthouse, a community house for women, a country club, and a Carnegie library. The city is the home of five insurance companies, has manufactures of matches, paving bricks, burial furnishings, flour, foundry products, lumber, metal polish, barbed wire, etc. Settled in 1822, Crawfordsville was incorporated in 1865 and is governed under a charter of that date, which provides for a mayor, elected every four years, and a city council. The electric-light

plant is owned by the city. Crawfordsville was the home of Gen. Lew Wallace, author of *Ben Hur*, to whom a monument has been erected. Pop., 1900, 6649; 1910, 9371.

CRAWFURD, JOHN (1783-1868). A Scottish Orientalist, born in the island of Islay, Hebrides. He went as a physician to India and served for five years in the army of the Northwest Provinces. Transferred to Penang, Malay Peninsula, he acquired a knowledge of the Malay language, which proved valuable on the occasion of Lord Minto's conquest of Java (1811). From 1811 to 1817 he held various posts in Java, in 1821 was sent as envoy to Siam and Cochin China, from 1823 to 1826 administered the government of Singapore, and in 1827 was sent on a difficult diplomatic mission to the court of Ava. He published, in addition to an account of this mission (1829): *History of the Indian Archipelago* (3 vols., 1820); *Grammar and Dictionary of the Malay Language* (2 vols., 1852); *Descriptive Dictionary of the Indian Islands and Adjacent Countries* (1856); *China and its Trade* (1858); and, finally, the journals of his embassies to the courts of Siam and Cochin China (London, 1828) and to the court of Ava (1829; 2d ed., 2 vols., 1834).

CRAWL-A-BOTTOM. A local name in the Mississippi valley for two small fishes: 1. The largest of the darters (*Hadropterus nigrofasciatus*). See DARTER. 2. The hog sucker, or stone roller (q.v.)

CRAWSHAW, WILLIAM HENRY (1861-). An American educator and author, born at Newburgh, N. Y. He graduated in 1887 at Colgate University, where thereafter he was an instructor (1887-89), associate professor of English (1889-93); professor of English (after 1893) and also (after 1897) dean. He was also acting president during several years. The University of Rochester conferred on him the degree of Litt.D. (1909), and Syracuse University that of LL.D. (1910). He published an edition of Dryden's *Palamon and Arcate* (1898); two excellently suggestive little works in criticism, *The Interpretation of Literature* (1896) and *Literary Interpretation of Life* (1900); and *The Making of English Literature* (1907).

CRAYER, kri'ër, Fr. pron. krä'yä', GASPAR, or JASPER DE (1584-1669). A Flemish historical and portrait painter, born in Antwerp. He studied under Raphael Coxie (son of Michiel Coxie) in Brussels, where he lived many years, and in 1664 went to Ghent, for the churches of which he painted more than 20 altarpieces. He was appointed court painter to the Cardinal Infant Ferdinand and afterward to King Philip II of Spain. Though perhaps the most prolific of all religious painters and prone to exaggerated sentiment, he yet maintained a certain excellence in composition and execution. He was strongly influenced, especially in color, by his friend Rubens. His works are to be found throughout Flanders and Brabant and in the provincial museums in France, where many were carried during the French invasion. Among the best known are: "The Four Crowned Martyrs" (Lille Museum); six pictures celebrating the entrance of the Cardinal Infant (Ghent); "Alexander and Diogenes" (Metropolitan Museum, New York); "Glorification of St. Catharine" (in St. Michael's, Ghent); "The Miraculous Draught of Fishes," "Adoration of the Shepherds" (Brussels Museum); "Decapitation of St. John the

Baptist" (Ghent Cathedral); "Judgment of Solomon" and "Martyrdom of St. Blasius" (1668), his last work, both in the Ghent Museum. His portraits include those of the Cardinal Infant (Prado) and Philip IV (Uffizi). Jan van Cleve, the most important of his pupils, assisted him in many of his works. Consult his biography by Maeterlinck, in *Bulletin de la Société d'Histoire et d'Archéologie de Gand* (Ghent, 1900).

CRAYFISH. See CRAWFISH.

CRAYON (Fr. *crayon*, from *crâie*, chalk, from Lat. *creta*, chalk). A term usually applied to pencils made of charcoal, pipe clay, or chalk, colored with various pigments and used for drawing on paper, wood, or other materials. Blackboard crayons are made largely of chalk, while black crayons are composed of pipe clay and lampblack. Those used for drawing on lithographic limestone are commonly made of a mixture of wax, lampblack, soap, and resin. *Pastel* is a mixture of chalk and coloring materials, worked into a paste with gum water. The vegetable colors used are turmeric, litmus, saffron, and sap green, but should in every case be free from acid, as the latter reacts on the chalk. *Vienna white*, used by artists, is simply purified chalk. *Red chalk* is made from an ochery clay, i.e., one containing much iron oxide. *Briançon chalk* and *French chalk* are popular names for soapstone, which is very different from chalk in its composition, being a silicate of magnesia. See CHALK; PENCIL.

CRAYON, GEOFFREY. The nom de plume adopted by Washington Irving in *The Sketch-Book*, etc.

CRAZY HORSE. A distinguished chief of the Oglala Sioux, who was joint leader with the famous Sitting Bull in the War of 1875 and was prominent in Custer's defeat. He was killed while resisting arrest in September, 1877. Consult Miles, *Personal Recollections* (Akron, 1896).

CREAM (OF. *creame*, Fr. *crème*, from Lat. *cremor*, thick juice). The thick, light-yellow substance, rich in fat, which rises to the surface of milk on standing. The methods of creaming milks, by setting and by the separator, are described under BUTTER MAKING. The composition of cream is influenced by the method and condition of creaming, and varies within wide limits. Cream contains the same constituents as milk, but in very different proportions. The fat may vary from 10 to 70 per cent; good cream for butter making, or for household use, contains from 18 to 25 per cent of fat, and very rich cream from 35 to 40 per cent. The richness of cream raised by the separator can be regulated at will. Cream is sometimes thickened artificially by adding gelatin, isinglass, etc. Cream which has been pasteurized, or heated to prevent souring, loses some of its thickness or viscosity, and the addition of sucrose of lime has been proposed to make it whip better. The famous clotted or "clouted" cream of Devonshire, England, is prepared by heating milk which has stood for 24 hours in a shallow pan over a slow charcoal fire for a half to three-quarters of an hour, without boiling, allowing it to stand for 24 hours, and then skimming off the cream, which is sprinkled with sugar.

CREAMERY. A factory where butter is made by machinery from milk or cream, furnished by the neighborhood. It is an American institution, and originated in New York about

1864, being suggested by the success of the cheese factory (q.v.), which had been in operation for several years. Within the past 15 or 20 years the growth of the creamery system has been very rapid, and creameries are now thickly distributed over the principal dairy regions. They differ in their form of organization and also in the method of operation. Coöperative factories are owned by the farmers ("patrons"), who supply the milk, and who choose from their own number a managing committee, or board. The cost of running the factory, and the proceeds of sales, are divided pro rata according to the milk, cream, or butter fat contributed. This is the oldest and in many respects the most desirable form of organization. In the joint-stock and proprietary creameries the milk or cream is bought of the farmers under a contract, or the factory may make butter and dispose of it for its patrons for a fixed charge per pound. The milk may be delivered at the creamery, where the cream is separated by power, the farmers receiving the skim milk for feeding; or the cream may be raised or separated by the farmers themselves and sent to the factory every two or three days. The latter are called "gathered-cream creameries." The cream-gathering plan originated in Wisconsin, and was the basis upon which creameries were established in New England, where it continues popular. The cream is raised by gravity in deep cans or by means of hand separators, and is paid for by the "space." The "space" has been shown to be an unreliable measure, as the value of a space of cream for butter making varies widely; and payment on the basis of the fat furnished, as determined by test, is now generally adopted.

Where the whole milk is furnished to the creamery, it is delivered daily, which involves a great deal of labor in hauling. In almost all cases, the hauling devolves upon the milk producer, often the farmers living near together cooperate in this, or contract with some person who makes a business of doing the hauling. The milk was formerly paid for by the pound, this being a convenient means of measurement; but the injustice of this to the producers of rich milk, and the introduction of the Babcock milk test, have led to payment on the basis of the butter fat. The milk of each patron is weighed as it is received and a sample taken for testing; usually the samples for a week or so are combined into a composite, to reduce the labor of testing. From the amount of milk delivered, and the fat content, the amount of butter fat furnished by each patron is calculated at the end of the month. In most of the leading creamery districts the separator factory is now the favorite system. In many places these creameries have located "skimming stations" at points convenient for the patrons, where the milk is run through the separator and the cream then taken to the creamery. This reduces the labor of hauling to a minimum. The system of making butter at creameries is, in many respects, a vast improvement over the ordinary farm dairy practice. The use of machinery reduces the cost of butter making, and the milk and cream are handled by experienced butter makers according to the most approved methods. The result is a uniform product, equal to the best of the single dairies, and a great improvement over the average, which sells for a high price. Furthermore, there is less loss of fat in making than at farm dairies, and hence a larger quantity of butter is

produced from the same cows. The labor and expense of making and marketing the butter are removed from the farms and households. Creameries have been of great advantage to the farmers where they are located, and the payment for milk on its fat content has stimulated the farmers to keep better and more profitable cows. Some of the more modern creameries have a very large capacity. The Franklin County Creamery, at St. Albans, Vt., was formerly the largest in the country, having a capacity of five or six tons of butter a day. There are now a considerable number equally as large, and several much larger, running up to 15 tons of butter a day in some cases. A large creamery in Nebraska has over 100 skimming stations connected with it. The thirteenth census reported 4783 creameries in operation in the United States in 1909, which made 624,764,653 pounds of butter, as compared with 420,126,546 pounds in 1899. Wisconsin led all other States in creamery output. The first Danish cooperative creamery was put in operation in Jutland in 1882. The number at present mounts into the thousands. The creamery or factory system of butter making has spread generally throughout European countries, Australia, and South America, wherever butter is made on an extensive scale. In some countries the coöperative plan predominates, and in others the factories are more largely proprietary or operated by private firms. See BUTTER MAKING.

CREAM NUT. See BRAZIL NUT.

CREAM OF TAR/TAR (OF. *tartre*, from ML. *tartarum*, MGk. *ráprapos*, *tartaron*, *tartar*, probably from Lat. *Tartarus*, Gk. *Táprapos*, *Tartaros*; hardly a corruption of Ar. *durd*, *dragos*, from *darida*, to lose the teeth). A potassium bitartrate that is contained in argol (q.v.) and is prepared by dissolving the argol in hot water and removing any coloring matter by means of clay or egg albumen; the cream of tartar is then separated from the filtered solution by crystallization and may be purified by recrystallization. Cream of tartar is a white crystalline compound that is soluble in water and is used in medicine as a refrigerant and purgative. With sodium bicarbonate it is used as a substitute for yeast in raising bread. It is also the source of tartaric acid and of tartrates.

CREASE. See KRIS.

CREASOTE. See CREOSOTE.

CREASY, kré'sí, SIR EDWARD SHEPHERD (1812-78). An English historian, born at Bexley, Kent. He became fellow of King's College, Cambridge, in 1834 and in 1837 was called to the bar. In 1840 he was appointed professor of modern and ancient history in the University of London, and in 1860, when he was knighted, Chief Justice of Ceylon—a post he held for 10 years. He is most widely known for his *Fifteen Decisive Battles of the World* (1852), a work which has been very favorably received alike by the critic and the general reader. His other works, less known, but in many cases of almost equal merit, include an *Historical and Critical Account of the Several Invasions of England* (1852); *History of the Ottoman Turks* (1854-56); *Imperial and Colonial Constitutions of the British Empire* (1872); and two excellent books on Eton.

CREATIN. See KREATIN.

CREATININ, kré-át'í-nín. See KREATININ.

CREATION (Lat. *creatio*, from *creare*, to create, connected with *creresco*, to grow). The

act or acts by which the world is supposed to have been brought into existence. When man's mind matures sufficiently to reflect upon cause and effect, it is apt to raise a question as to the origin of the objects by which he is immediately surrounded, and this gradually leads to inquiry in regard to the beginnings of the whole scheme of things. Curiosity, which is the mainspring of all scientific progress, suggests the lines of inquiry and credulity, which is the brake preventing excessive speed, has a tendency to be satisfied with the easiest explanation. As man became himself a creator, fashioning things for his purposes, and grew conscious of the value of his achievements, he naturally began to wonder how various objects had been formed. The simplest explanation occurring to him was that some one had made them. Nor was he at a loss for an answer to the question as to who these producers could have been. They must have been in his neighborhood once and then gone away to live somewhere else. They were not gods, since no worship was paid to them, nor ancestors, since the secret of fatherhood had not yet been discovered, but beings conceived of as man, or animals, or partly human and partly animal, possessed of that extraordinary power which makes some things objects of special interest, wonder, and dread. Such are the conceptions of peoples that have lived until recent times in Stone-age conditions in Melanesia, Polynesia, Australia, America, and Africa, and such in all probability were the ideas of Stone-age peoples in the remote past. Studies of the Melanesian *mana*, or power, the Polynesian *tabu*, or danger attaching to objects possessed of *mana*, the American *totem*, or the animal (or other object) increasing and helping the tribe, the Australian *alluranga-mityuna*, or the uncreated totemistic producers of early times, and the mystery cults and exogamy of various tribes, the results of which may be best seen in the recent works of Durkheim, Marett, Frazier, W. Schmidt, and Soderblom, as well as of the notions that come to view in man's earliest pictorial representations of himself in the Magdalenian period of the Paleolithic age (see MAN), have led to a growing appreciation of the importance of these primitive creators. Soderblom has shown in his latest work on the subject (1914) that this crude idea of "makers" possessed of extraordinary power cannot be adduced as evidence of an original monotheism, as has been done by Andrew Lang and W. Schmidt, but reveals one of the roots of the god belief, and may be traced into historic times, e.g., in the case of the Chinese Shang Ti.

The predynastic Egyptians represented Horus as a falcon. His totemistic origin is obvious; but, however probable it may be, it has not yet been proved that he was then considered as a creator. But Khnumu, the god of the cataract district, who fashioned on his potter's wheel heaven and earth, gods and men, is always represented with a ram's head, the unmistakable sign of his original character as a totem. Thoth of Hermopolis, who created heaven and earth, had the head of an ibis, probably, before he became the god of the moon; the conception grew up, how early cannot be determined with certainty, that Keb and Nut were created at his command. Ptah, who always appears as a man, formed the sun egg

and the moon egg on his potter's wheel; but the priests of Memphis at an early time emphasized that he thought before he spoke, and that things came into existence when he spoke. Re was a beetle before he became the sun god and may already, before this transformation, have been considered, as he was later, the father of gods and fashioner of men and things. Osiris is always represented as a man and may have been thought of as such before he became the god of the Nile and the vegetation dependent upon it. He made the earth and the creatures upon it. In Babylonia the great Sumerian deities—Ellil of Nippur, Anu of Uruk, Ea of Eridu, and Marduk of Babylon—who act as creators are all thought of as men, though connected with earth, heaven, and sea. The earliest version of the Sumerian story of creation, published by Poebel in 1913, assigns different parts to Ellil, Anu, and Ea, which may indicate a fusion of three stories. Another version in Sumerian with an Akkadian translation was already known, and the longest recension, in which Marduk, after a struggle with the chaos monster Tiamat and her helpers, creates heaven and earth, was found in the palace of Assurbanipal in 1875 and deciphered by George Smith. Before that time only the fragmentary quotations from Berosus (q.v.) were known. The German excavations at Assur (q.v.) have brought to light the fact that Sennacherib ascribed the creation of the world to Assur (see ASSUR). The worshippers of Ahura Mazda in Iran regarded him as the creator. Already Darius Hystaspis, in his inscription at Behistun (q.v.), declares that he has created "this earth and yonder heaven." In the Avesta a distinction is introduced between the good things in the world (light, virtue, love, good spirits, life) that are created by Ahura Mazda, and the evil things (darkness, vice, hatred, demons, death) that are the work of Angra Mainyu. The dualism resulting from this is, however, overcome by the ultimate victory of Ahura Mazda. In India the primitive notions of a heaven father and earth mother who made all things, or the Purusa, the male principle which originated them, gave place to the idea of Brahma, the creator, which in turn yielded to the pantheistic conception of the universe that left no room for an extra-cosmic divinity or a creation (see VEDANTA) among the more thoughtful, while even the popular cults of the Trimurti (q.v.) and Kali, the symbol of the ruthless forces of nature, are based on the assumption of the infinite and eternal character of the world. Early Greek thought, as seen in Homer, Hesiod, and the Orphic hymns, explained the origin of gods and men by a primeval triad—Night, Heaven, and Earth—and did not attempt to go further. The Ionian philosophers endeavored to find the essential nature of things which would explain the forms they assume. Thus, Heraclitus regarded the first principle as on one side Fire, on the other Intelligence. An independent and immaterial world-forming agency, expressing itself in Love and Discord, was assumed by Empedocles, while Anaxagoras found it in Reason. To Plato's thought matter is eternal, and creation means the activity of God by which he impresses upon the shapeless material forms or patterns, conceived of as a system of ideas. "The Creator made the universe because he was good and desired that all things should be as like him-

self as possible" (*Timæus*, iii, 613); but there is something in the intractable material that resists the creator, and in the residue beyond his power evil has its place. Aristotle rejected the system of ideas, but himself retained the essential dualism which Epicureanism sought to overcome by a materialistic, Stoicism by a more idealistic, monism. Ovid's *Metamorphoses* and *Fasts* reveal some of the popular conceptions in the Latin world on the subject of creation, while *De rerum natura* by Lucretius is the grandest and most characteristic effort of the Roman mind to explain the origin of things along Epicurean lines. The Icelandic Gylfaginning and Völuspá have been suspected of showing Christian influence. Such a coloring in transmission is not impossible; but it is likely to have affected the figure of Balder and the eschatology more than the story of the original chaos and the struggle with its powers, the creation of the world by the three Æsir, and the fashioning of the first human pair out of the trees Ask and Embla; and it is difficult to prove anywhere.

In the Hebrew account of creation there seem to be indications of more than one original version. Gen. i. 1-ii. 4a gives a complete description of how the heavens and the earth and all that is in them, including the human race, came into existence during a period of six days at the command of God, who then rested upon the seventh day. On the first day light was produced and day and night divided; on the second day the firmament (q.v.) was created and the waters separated; on the third day the dry land appeared and plant life began; on the fourth day the heavenly luminaries were made, on the fifth day fishes and birds were made, on the sixth day land animals and man were created. The Greek version by its *ἐν ἀρχῇ, ἐν ἀρχῇ*, without the article shows that the first word was read *berēshith* and not *barēshith* already in the third century B.C. The construct relation with what follows, thus demanded by tradition, is of importance as it suggests this translation: "When God began to fashion the heavens and the earth, the earth was in a chaotic state, and darkness lay upon the great abyss, though the spirit of God was brooding over the waters, but God said, 'Let there be light' and light came." The correctness of this rendering seems to be indicated also by the fact that the heavens are created on the second day and provided with luminaries on the fourth, and the earth is made on the third. Chaos, with its darkness and its waters, appears, therefore, to have existed before God began to form it into a Cosmos, and the "brooding" hints at the underlying conception of a world egg. The creation of the human race is preceded by a council in heaven; the words "Let us make men in our image" are understood by many scholars as a remnant of the original polytheistic setting, the image referring to the outward form, while others think of the persons of the Trinity, God and His angels, or a plural of majesty (which, however, is without analogy in Hebrew literature), and of "the image of God" as referring to those godlike qualities that distinguish man from the animals. As there are two works on the third and two on the sixth day, it has been supposed that a division into eight classes preceded the arrangement into a week of six days followed by a sabbath. The practical purpose

of giving a reason for halloving the sabbath day is obvious. That an earlier form of the story has been worked over may be inferred from the fact that Job ix. 13, xxii. 12, 13, Isa. li. 9, Ps. lxxiv. 12 ff., and other passages show how familiar the Jewish mind was with the struggle between Yahwe and the chaos monster (Iahab, Tehom, Leviathan) before creation, while this nature myth seems to have been intentionally suppressed in Gen. i. The statement in Isa. xlv. 7, "I form the light and create darkness: I make peace and create evil," is probably not meant either as an attack upon this myth or a correction of the dualism of Avesta, but only as an assertion that prosperity and adversity alike come from Yahwe, the only living God. As the original Mazdaism and Plato, Gen. i. emphasizes the goodness of all the objects in nature as they came from the hand of the creator. Gen. ii. 4b-25 seems to be an excerpt from another story of creation. It begins by relating how on the day when God made earth and heaven there was no vegetation, because no rain had fallen and man did not exist to till the ground, but that a stream began to rise so as to water the ground, from which God then fashioned a man and blew into his nostrils the breath of life. There follows the description of the planting of a garden, the making of animals which are brought to man to be named, and since none of them proves a "help" to him, the creation of a woman out of a rib taken from him while in a deep hypnotic sleep. There is no account of the creation of heaven such as the introduction leads the reader to expect; and it is probable that this version has also been abbreviated by the suppression of some original features. Many scholars consider it the work of a writer whom they call the Yahwist (see ELOHIST and YAHWIST), but N. Schmidt has shown, in *Journal of Biblical Literature*, xxxiii, 1, pp. 25 ff. (1914), that the original text had "Elohim" everywhere, and not "Yahwe Elohim." As to the age of the two narratives in their earliest form nothing is known with certainty. Babylonian influence, mediated through the Amorites, is not improbable, and may be much older than is generally thought in view of the spread of Babylonian myths in the Tell el-Amarna period (see ADAM), but the native element need not be limited to a gradual elimination of the polytheistic features. A creation out of nothing is first taught in 2 Maccabees vii. 28, though the *ex nihilo* of the Latin version is more unmistakable than the *οὐκ ὄντων, οὐκ ὄντων*, 'things not existing,' of the Greek.

The early Christians adopted the views prevalent among the Jews. Those influenced by Hellenistic thought regarded the things seen as having come from "things not seen" (Heb. xi. 3), and the Logos (John i. 3), or the Son (Col. i. 15 ff.), as the medium of creation. Origen considered the work of creation as without beginning or end, and Augustine looked upon the preservation of the world as a continuous creation. Johannes Scotus Erigena also taught that God's working was equally eternal with His being. Through Descartes, Spinoza, Fichte, Hegel, and Schleiermacher it has become a view very widely adopted among theistic philosophers and theologians that the creative activity of God is as eternal as himself. In the sense of *natura naturans* the word has been used even by thinkers who disavow all pantheistic implications, whether denying all

teleology or simply accepting it as inherent in nature; and Haeckel has published a *Naturliche Schöpfungsgeschichte*. The use of such a term may to some extent be justified by the etymological connection with *crescere*, to grow, but has been criticized, not altogether unjustly, on the ground of its departing from the historic meaning attached to the word, though in a measure this criticism also applies to every attempt made in recent times to square the idea of a creation with what are regarded as the established results of natural science. Consult: Lukas, *Die Grundbegriffe in den Kosmologien der alten Völker* (Leipzig, 1893); Tylor, *Primitive Culture* (2 vols., New York, 1891); Andrew Lang, *Making of Religion* (3d ed., New York, 1910); Marett, *The Threshold of Religion* (London, 1909); Schmidt, "Grundlinien einer Vergleichung der Religionen und Mythologien der austronesischen Völker," in *Denkschriften d. k. Ak. d. Wiss. in Wien* (Wien, 1910); Durkheim, *Les formes élémentaires de la vie religieuse* (Paris, 1913); Söderblom, *Gudströms uppkomst* (Stockholm, 1914); Erman, *Die ägyptische Religion* (Berlin, 1909); Breasted, *Religion and Thought in Ancient Egypt* (New York, 1912); Jastrow, *Die Religion Babyloniens und Assyriens* (Gießen, 1902-12); id., *Hebrew and Babylonian Traditions* (New York, 1914); Poebel, in *Babylonian Publications of the Museum of Archaeology of the University of Pennsylvania*, vi (Philadelphia, 1913); Rogers, *Cuneiform Parallels to the Old Testament* (New York, 1912); Rydberg, *Germanisk mytologi* (Stockholm, 1886-89); Mullenhoff, *Deutsche Altertumskunde*, v (Berlin, 1892); Gunkel, *Schöpfung und Chaos* (Göttingen, 1895); id., *Die Urgeschichte und die Patriarchen* (ib., 1911); H. P. Smith, *The Religion of Israel* (New York, 1914); Strachan, "Creation," in Hastings, *Encyclopædia of Religion and Ethics*, iv (New York, 1912).

CREATION, THE. 1. A philosophical poem by Sir Richard Blackmore (1712), which was highly commended by Addison and Johnson. 2. A celebrated oratorio by Haydn, first produced in Vienna in 1798.

CREATIONISM. A term applied in the latter half of the nineteenth century to the theory of the origin of man which is opposed to evolution. (See ANTHROPOLOGY, EVOLUTION.) As a theological term, it has long been in use to designate the theory of the origin of man's soul by the special creative act of God in the case of each individual. It is opposed to "traducianism," which is the theory that the soul of the individual is derived by generation from the souls of his parents as truly as is his body. The Scriptures give no decision upon this question. Creationism goes back of the Christian Church and is found in Aristotle. It was the prevailing view in the Church after the fifth century and was held by Jerome and Pelagius and by most of the schoolmen. In modern times it has been frequent in the Reformed (Calvinistic) churches and is generally approved to-day in Catholic teaching. Aquinas distinguished between the sensitive or animal soul, which man has in common with brutes and which is inherited, and the soul which is the basis of the human intellect, which comes directly from God to every individual by creation. This distinction, under the terms of "spirit" and "soul," was often made later by both Catholic and Protestant theologians. Traducianism was advocated by

Tertullian (c.200), by Gregory of Nyssa, and some of the other Greek fathers. In modern theology it has been the prevailing Lutheran theory. Augustine is claimed for both sides. He seems to have been really a creationist, but saw some of the difficulties so clearly that he sometimes expressed ideas which imply traducianism. In a letter to Jerome (iii, 166) he begs to know how, if the soul comes from God by creation, it contracts guilt so that children need baptism, but he does not turn to the refuge of traducianism. The ancient Church found arguments for creationism in those passages of the Bible which represented God as the creator of the individual man, in the simplicity of the soul, which could not be divided and so propagated; in the sinlessness of Christ, reasoning that only if souls come fresh from the hand of God could Christ's soul be truly human and yet sinless; in the marked individuality of persons, and in the immateriality of the soul. The doctrine of original sin constituted the great source of argument for traducianism. How could man be guilty of sin unless he had descended, in soul as well as in body, from the source of human sin in Adam? It was also claimed that the theory was analogous with God's action in nature, and that it best explains the complex facts of human heredity. It accords well with the theory of realism, which Augustine held, that human nature was deposited in Adam, and all men share it from him. Many theologians, both ancient and modern, have regarded the whole subject as a mystery and have been willing to agree with Augustine's modest statement, "When I wrote my former book, I did not know how the soul derives its being, and I do not know now." Modern studies of personality and heredity have shifted discussion from this problem to the scientific consideration of the facts of human life, so that most of the historic theoretical arguments on both sides command little interest now. See TRADUCIANISM, ORIGINAL SIN.

CREATIVE EVOLUTION (*L'Evolution créatrice*) A memorable philosophical treatment of evolution by Henri Bergson (1909), presenting a new and stimulating consideration of its processes in nature and man. See BERGSON, HENRI.

CRÉBILLON, krá'bé'yôn', CLAUDE PROSPER JOUYOT DE (1707-77). A noted French storyteller and wit. He was born in Paris, Feb. 14, 1707, the son of the dramatist Prosper Jolyot Crébillon. Except for a five years' exile for political and theological allusions in his novels, especially concerning the papal bull *Unigenitus*, which led also to a brief imprisonment in the Bastille, he passed his life in Paris. Though he occupied at one time the office of literary censor, through the good graces of Madame de Pompadour, his fiction is a byword for its licentious suggestiveness. It shows a graceful talent, however, which was unfortunately wasted, together with a thorough mastery of style and keen powers of observation, in the most trivial manner. His best-known tales are *L'Ecumeiroe ou Tanzéi et Néadarné* (1734), followed in 1736 by the notorious *Les égarements du cœur et de l'esprit*, and in 1745 by *Le sophia*, than which it has not been possible to descend further in the refinements of immorality: not a gross word and not a decent thought. The conversation is witty, the manners refined after their kind. This smirking voluptuousness is only the completest literary expression of the spirit of the time, that

was sapping the foundation of national strength and character and preparing the way for the Revolution. Strange to say, he was irreproachable in his private life and proved to be a model husband to Lady Henrietta Maria Stafford, an Englishwoman, who fell in love with him after reading his works. He died in Paris, April 12, 1777. Consult C. H. Amanton, *Particularités sur les deux Crébillon* (Paris, 1835).

CRÉBILLON, PROSPER JOLYOT DE (1674-1762). A noted French tragic poet, born in Dijon, Jan. 13, 1674. He abandoned the law for the stage on the success of *Idoménée* (1705), and with *Atrée et Thyeste* (1707) took first rank among the tragic poets of his time. Among the more noteworthy of his subsequent tragedies are: *Electre* (1708); *Rhadamiste et Zénobie* (1711), his best work, *Pyrrhus* (1726), *Catiline* (1748). Crébillon became an Academician in 1731 and held several minor public offices, among them that of stage censor. Later he became indigent, but died in comfort through the profits of an edition of his *Works* (1750), made at the royal order and charge. He died in Paris, June 17, 1762. Crébillon suffered, as did his fame, from the envy and enmity of Voltaire, himself a tragic poet of greater polish, though less rugged power. He is apt to mistake the horrible for the grandiose, and inflation for energy in diction, as did Corneille, whom among French dramatists he most resembles both in his qualities and his defects. At a time when France no longer possessed a great tragic poet of the calibre of Racine, capable of fathoming the depths of the human soul, Crébillon was most useful to the drama of his day, if only by the example of his rugged genius for inventing tense and tragic situations, in which very far-fetched mistaken identities helped to prolong the suspense. Voltaire himself used four of Crébillon's plots. Crébillon's *Works* have been often edited, best perhaps by Didot (1812). There is a *Life* by the Abbé de la Porte, and a discriminating critical essay on Crébillon's place in the development of French drama in Brunetière's *Époques du théâtre français*. Consult also Dutrait, *Étude sur Crébillon* (1895), and C. H. Amanton, *Particularités sur les deux Crébillon* (1835).

CRÈCHE. See NURSERY, DAY NURSERY.

CRÉCY, krá'sé'. A small town of France, in the Department of Somme, on the Maye, about 12 miles north of Abbeville (Map: France, N., G 2). It is celebrated as the scene of a brilliant victory gained Aug. 26, 1346, by Edward III, with about 19,000 English and Welsh soldiers, over a French army amounting to about 60,000 men under the command of Philip VI. In this great battle vast numbers of the French nobility perished as well as King John of Bohemia and 11 other princes, who were fighting on the side of France. Altogether about 30,000 of the French army fell. At Crécy the Black Prince greatly distinguished himself and gained his spurs. Consult George, *Battles of English History* (New York, 1895), and Oman, *History of the Art of War* (London, 1898).

CRÉDÉ, krá-dá', KARL SIGISMUND FRANZ (1819-92). A German gynecologist, born in Berlin. He studied medicine in Berlin and in Heidelberg, and in 1852 was made director of the School of Midwifery and of the obstetric department of the Charité in Berlin. Four years later he was made professor of obstetrics and

director of the lying-in hospital in Leipzig. His published works include the following: *Klinische Vorträge über Geburtshilfe* (1853-54); *Die preussischen Hebammen, ihre Stellung zum Staat und zur Geburtshilfe* (1855); *Observationes de Fetus Situ inter Graviditatem* (1862-64); *Die Verhütung der Augenentzündung der Neugeborenen* (1884); *Gesunde und kranke Wöchnerinnen* (1886); *Lehrbuch der Hebammen* (6th ed., revised by Leopold and Zweifel, Leipzig, 1897). From 1853 to 1869 he was coeditor of the *Monatsschrift für Geburtskunde und, for many years, of the Archiv für Gynakologie*.

CRE'DENCE (It. *credenza*, belief, cupboard, ML. *credentia*, from Lat. *credere*, to believe). A side table, buffet, or sideboard, on which dishes were placed or kept before meals; a cupboard in which stores or household gear were kept. Also, in the ecclesiastical terminology of the Roman Catholic and Episcopal churches, a small table or shelf near the altar or communion table on which the bread and wine are laid before being consecrated; in the Greek church it is called the *trapeza prothesis*. The Oxford movement was largely responsible for its reestablishment in the Episcopal churches of Great Britain and America.

CREDI, krá'dé, LORENZO DI (1459-1537). A Florentine painter of the Renaissance. He was born in Florence and was a pupil of Andrea Verocchio, at the same time with Leonardo, and Perugino. His style was at first severe, like that of Verocchio, but in later life his manner became softer. He executed his work with great care—in fact, he paid almost too much attention to detail, and though full of delicate sentiment, his pictures are lacking in originality. Throughout his life he was influenced by the quality of Da Vinci's art. His favorite subject was the Madonna and Child, fine examples of which are in the Louvre, the National Gallery, London, and the galleries of Dresden, Turin, Mainz, and the Holden collection, Cleveland. He also painted the "Adoration of the Shepherds" many times, among the finest examples being those in the Querini Stampaglia Gallery, Venice, and the Florence Academy. Credi is seen at his best in the "Annunciation" and the "Venus" in the Uffizi. He is represented in the Metropolitan Museum, New York, by a "Madonna Adoring the Christ Child" and in the Boston Art Museum by a beautiful boy's head. He was also a sculptor, and was designated by Verocchio to complete his statue of Colleoni.

CRED'IT (Fr. *crédit*, from Lat. *credítum*, a loan, neut. p. p. of *credere*, to trust). In political economy this term indicates broadly the confidence which is reposed in the ability and purpose of men to meet future obligations. It is defined by J. S. Mill as permission to use another's capital, and by H. D. MacLeod as "a right of action." While it rests etymologically upon trust in human nature, the term embraces many operations in which this plays a small part, in which by the establishment of claims to portions of the debtor's estate the creditor assures himself of the repayment. A familiar illustration of such transactions are the loans of bankers upon collateral security.

From an objective point of view the essence of a credit transaction is that on one side the transfer of goods or money is immediate, on the other that the return is deferred. Personal credit resting solely upon the good faith of the creditor is the earliest form in which credit ap-

pears, and is still widely prevalent, as in the book accounts of retail merchants. But in the larger transactions of commerce credit could not have gained its prominent place without the intervention of instruments of credit. These assume various forms, notes, drafts, mortgages, bonds, etc.; but all have a common purpose—to insure the transferability of the claim against the debtor. Without them the lender—for whatever form the credit may assume it is always in the nature of a loan—must await the pleasure of the debtor or the termination of the contract before he can enter into possession of his own. With these instruments of credit he practically has control of his capital whenever he desires to use it. By transferring his claim to others he can secure his capital at any time.

Credit rests ultimately upon the fact that many persons possess wealth who have no present use for it and are willing that it should be employed by others. If circumstances arise, as in times of panic, when each seeks to secure for himself the actual possession of his wealth, then credit cannot be obtained, and those whose transactions require it must either pay exorbitant prices for it or be crushed out. This explanation of credit will serve to indicate the important function which banks play in the world of business. They are reservoirs of credit. In them are gathered claims upon the unemployed wealth of the community, and through them this wealth is directed by loans into channels of usefulness. It is brought together in small and large quantities from all classes of persons who do not immediately need it, and who are unable or unwilling to loan it directly. From the point of view of individuals credit is frequently spoken of as capital, because, like capital, it increases their productive power. But credit from a national point of view is to be regarded as capital only in so far as it diminishes the amount of wealth which would otherwise lie idle and increases that which is devoted to productive purposes. An effective organization of credit does not produce wealth, but draws out wealth and enhances its usefulness. Hence a nation in which credit, as in Anglo-Saxon communities, is highly organized will have a higher productive capacity than one in which a primitive organization prevails. Credit is not without its dangers, and when the credit organization is out of joint the results are disastrous. This is the price of progress. As the disasters to a railroad express train are more severe than those which overtake the lumbering wagons which preceded it, so the commercial disasters of a highly organized nation with a broad development of credit are more serious than those of less advanced peoples. The remedy is not to go back to the wagons, but to apply every device to insure the safety of the modern vehicle. For a clear analysis of credit, consult: MacLeod, *Theory of Credit* (London, 1889-91); Dunbar, *Chapters in the History and Theory of Banking* (New York, 1892); Report of *Comptroller of the Currency*, 1896; Veblen, *The Theory of Business Enterprise* (New York, 1904); W. C. Mitchell, *Business Cycles* (Berkeley, Cal., 1913); Taylor, *The Credit System* (New York, 1913). See BANK, BANKING; CRISIS, ECONOMIC.

CREDIT, AGRICULTURAL. See RURAL CREDIT.

CREDIT, LETTER OF. This term is applied in general to commercial instruments, usually in the form of a letter in which one party addresses a second, requesting him to pay certain sums of

money to a third. It is in effect a draft, except that the amount to be paid is stated, not absolutely, but as a maximum not to be exceeded. It presupposes that arrangements exist by which the party who sends the letter shall reimburse him who makes the payment. Such letters of credit may be drawn on one or on several parties, being in the latter case sometimes called "circular letters of credit." They are much used by travelers, and the leading houses issuing them have correspondents in all parts of the world. Those who issue them are generally so well known to the banking fraternity that any banker, whether a correspondent or not, will, upon proper identification, make payment on the letter. When the letter is issued, the person to whom it is given either pays outright the amount named in the letter, or furnishes acceptable security that the maker shall be reimbursed for the drafts upon him.

The alternative for the letter of credit is the travelers' note. This differs from the letter, in being issued in coupons, sometimes expressed on the face of the coupons for the currencies of other countries. Such travelers' notes were formerly issued extensively by the Cheque Bank of London, but the business in the United States has recently passed largely into the hands of the express companies. Such travelers' notes are sometimes designated "circular notes."

CRÉDIT FONCIER, krá'dé' fón'sya' (Fr., landed credit). The French name for a method of borrowing money on the security of landed property which is widely practiced in France and other continental countries. The borrower takes a loan, in return for which he contracts to make certain annual payments, which are so adjusted as to make provision for the interest and for the gradual extinction of the principal, which is fully paid when the term of the contract has been concluded. These contracts are generally made with companies organized for the purpose of loaning their capital in this fashion. Another variety of this form of credit is found in the *Pfandbrief* institute of the large landowners of Germany. Loans are made in the same way, but in return for the debt the borrower receives the securities of the association. He does not actually contract a debt until he sells these securities, which he may do in whole or in part.

CRÉDIT MOBILIER, SOCIÉTÉ GÉNÉRALE DU, krá'dé' mó'bé'ya'. A financial institution chartered by the French government in 1852, with a capital of 60,000,000 francs. As its name indicates, it was intended to furnish loans on personal property, in contrast to the various *crédit foncier* institutions, which loaned upon real property. The declared object of the new bank was especially to promote industrial enterprises of all kinds, such as the construction of railways and the opening of mines, by placing loans and handling stock. Various privileges were conferred upon it under its charter, among others it was allowed to acquire shares in public companies, and to pay calls made upon it in respect of such shares by its own notes or obligations; also to sell or give in security all shares thus acquired. The operations of the society were conducted upon a very extensive scale. In 1854 it subscribed largely to the government war loan, raised during the Crimean campaign, to the Grand Central Railway Company, to the General Omnibus Company of Paris,

and to various other important undertakings. The dividend declared for 1854 was 12 per cent. In 1855 it loaned two sums to the government—the one of 250,000,000 and the other of 375,000,000 francs, its operations were vast during this year, and the net dividend declared amounted to 40 per cent. The directors then proposed to avail themselves of their privilege of issuing their own obligations under two forms—the one at short dates, the other at long dates, and redeemable by installments. The proposed issue was to amount to 240,000,000 francs; but the public became alarmed at the prospect of so vast an issue, and in March, 1856, the French government prohibited the carrying out of the proposed scheme. This was a severe blow to the institution. In 1856 its dividends did not exceed 22 per cent., in 1857 they were only 5 per cent. Several attempts to resuscitate its credit failed, and finally, in November, 1871, it was reorganized and put under a new board of management. In 1877 its assets were 77,000,000 francs, but its shares, the par value of which was 500 francs, sold for 200 francs only. In 1878-79 the capital was first reduced to 32,000,000 francs and then raised to 40,000,000. In 1884 it was reduced to 30,000,000 francs, but the company never regained its lost ground. The *Crédit Mobilier* was undoubtedly useful in developing the industrial power of France, but its operations were hazardous, and had they not been checked in time, they would in all probability have ended in disaster. See *CRÉDIT MOBILIER OF AMERICA*.

CRÉDIT MOBILIER OF AMERICA. A joint-stock company, whose alleged corrupt operations in connection with the building of the Union Pacific Railroad gave rise, in 1872-73, to the greatest congressional scandal in American history. The company was chartered as the "Pennsylvania Fiscal Agency" in 1859, was organized for a general loan and contract business in 1863, and was reorganized under the above name in 1867, for the purpose of building the Union Pacific. This work, completed in 1869, was paid for largely in stock and bonds of the Union Pacific, so that the stockholders of the two companies soon came to be identical. The *Mobilier* stock, at first almost worthless, soon began to pay enormous dividends; suspicions were aroused; and in the presidential campaign of 1872 the company was charged with gross dishonesty, and many prominent Republicans, including the Vice President, the Speaker of the House, three Senators, and a number of well-known Representatives, were freely accused by the Democratic press of having been bribed in 1867-71 to use their influence and votes in favor of the Union Pacific, the alleged bribes having consisted of the sale of *Mobilier* stock to the accused at prices below its actual value. A prolonged investigation, conducted in 1872-73 by special committees in both the Senate and the House, resulted in a recommendation of the expulsion of one Senator, upon which, however, no action was taken, and the censure of two Representatives, Oakes Ames of Massachusetts and James Brooks of New York, respectively, for having sold *Crédit Mobilier* stock to members of Congress "with intent to influence the votes of such members" and for having indirectly received such stock. The scandal caused intense excitement throughout the country, and the *Mobilier* Company met with almost universal execration; but subse-

quent investigation has shown that the charges were greatly exaggerated and were at least never conclusively proved. Consult: Crawford, *The Crédit Mobilier of America: Its Origin and History* (Boston, 1880); and Hazard, *The Crédit Mobilier of America* (Providence, 1881), the latter being a paper read before the Rhode Island Historical Society in February, 1881. For an impartial account of the affair, see Rhodes, *History of the United States from the Compromise of 1850*, vol. vii (New York, 1906).

CREDITON, kréd't-ton; colloquially, kúr'ton, or **KIRK'TON**. A market town of Devonshire, England, in a valley on the Creedy, a tributary of the Exe, 8 miles northwest of Exeter (Map: England, C 6). Its chief industry is the manufacture of boots and shoes, also chemicals, tin plate, and confections. In the Middle Ages it was noted for its looms, and the saying "as fine as Kirtton spinning" was proverbial. Crediton was the birthplace of the Anglo-Saxon Winfrid, or St. Boniface. It was the seat of the bishopric of Devonshire until 1050, when the see was removed to Exeter. Pop., 1901, 3974; 1911, 3640.

CREDITOR (Lat. *creditor*, one who trusts, from *credere*, to trust). In its broadest sense, any person in whose favor a legal obligation exists, whether that obligation arises from the mutual assent of the parties, as in the case of *contract* (q.v.), or from a rule of law, as in the case of a *tort* (q.v.), or from a judgment or decree of a court of competent jurisdiction. In legal parlance, however, as in ordinary usage, the term is ordinarily restricted to one who has voluntarily given credit to another.

A *general* (simple or unsecured) creditor is one who has no *lien* (q.v.) on any property of his debtor, but only a personal claim or right of action. If a lien on property has been given to him by way of collateral security, mortgage, or pledge, he is called a *secured creditor*. If the debtor or the law secures a priority to one creditor, or to a class of creditors over others, such favored ones are said to be *preferred creditors*. In the absence of statutory provision to the contrary, a debtor may pay one creditor in preference to others, or he may make an assignment for the benefit of creditors, and direct that one or more shall be paid in full before anything is paid to the others.

The common law gave certain creditors a priority over others. For example, creditors of a deceased person were to be paid out of his estate in the following order: (1) those having claims for funeral and probate expenses. (2) the State; (3) judgment creditors; (4) landlords having claims for rent, and bond creditors, i.e., those who held bonds or sealed contracts of the deceased; (5) creditors by simple contract. This order has been modified to some extent by statute in the different States, and such legislation must be examined for detailed information on this point. The United States Bankruptcy Law of 1898 secures a preference to workmen, clerks, or servants for wages earned within three months before the commencement of proceedings, not to exceed \$300 to each claimant.

When a person obtains a judgment for money against another, he is called a "judgment creditor"; and if an execution is issued and levied, he becomes an "execution creditor." See **ARREST**; **ATTACHMENT**; **DEBTOR**; **COMPOSITION**; ETC., and consult the authorities there referred to.

CREDITOR'S BILL. A proceeding in equity by a creditor to reach assets which could not be levied upon under a common-law execution because of their character or the disposition made of them by the debtor. Thus an interest of a debtor in a trust estate or property conveyed by a debtor in fraud of his creditors, not being legal assets in the hands of the former and therefore not subject to execution on attachment in a common-law proceeding, can be made available for the creditor only by a proceeding in equity. See **BILL IN EQUITY**.

CREDNER, KRÄDNER, HERMANN (1841-1913). A German geologist, son of the following, born at Gotha and educated at Clausthal, Breslau, and Göttingen. He made extensive geological investigations in North and Central America (1864-68), the results of which were published in the *Zeitschrift der Deutschen Geologischen Gesellschaft* and the *Neues Jahrbuch für Mineralogie*. In 1870 he became professor of geology at the University of Göttingen, and director of the Geological Commission for the Kingdom of Saxony. In 1895 he became regular professor of geology at the University of Leipzig. In addition to a geological chart of the Kingdom of Saxony (1877 et seq.), and numerous works on the geological formations of that country, his works include: *Elemente der Geologie* (8th ed., 1897); *Die Stegcephalen und Saurier* (1881-93); *Die Urverflüssler des sächsischen Rothliegenden* (1891).

CREDNER, KARL FRIEDRICH HEINRICH (1809-76). A German geologist, born at Waltershausen, near Gotha. He studied at the universities of Freiberg and Göttingen, and in 1836 was appointed by the ducal government warden of the mint. In 1839 he became surveyor of mines, in 1850 mining counselor, and in 1854 state and mining counselor. He was in 1858 appointed by the government of Hanover superior mining counselor, and reporting counselor to the Finance Ministry, in which capacity he had under his supervision all the Hanoverian mining works, including the important ones of the Harz. From 1868 until his death he was mining privy counselor and director of mining in the Halle district. As a scientist, he was known for his study of the geology of those regions of Germany connected with his duties in the mining industry. He discovered a compound of oxides of copper and manganese, called in his honor "Crednerite," and published some valuable treatises, including *Versuch einer Bildungsgeschichte der geognostischen Verhältnisse des thüringer Waldes* (1855), and *Ueber die Gliederung der oberen Juraformation und die Walder-Bildung im nordwestlichen Deutschland* (1863).

CREE, krē (possibly a corruption of *creek*). One of the largest and most important tribes of Algonquian stock, living chiefly in the British-American territories of Manitoba, Assiniboia, Saskatchewan, about Lake Winnipeg and the Saskatchewan River, and eastward around James Bay. They are on friendly terms with the Assiniboin, but until brought under government control were constantly at war with the Sioux and Blackfeet. They have numerous bands, commonly grouped under two main divisions, viz., Plains and Wood Crees. Soon after obtaining firearms from the traders they began a war of conquest against the weaker Athabaskan tribes, as far even as the Great Slave Lake and the Rocky Mountains, but after-

ward retired to their present position. They number now probably 10,000, on several reservations within the territories mentioned. (Consult Skinner, *Notes on the Eastern Cree and Northern Saulteaux* (American Museum of Natural History, 1911).)

CREECH, THOMAS (1659-1700). An English translator. He was educated at Wadham College, Oxford, elected fellow of All Saints College in 1683, and was head master of Sherborne School from 1694 to 1696. He afterward returned to Oxford and in a state of melancholy committed suicide. Creech was a man of solid learning. He translated Lucretius (1682); Horace (1684); elegies of Ovid, two eclogues of Vergil, some of Plutarch's *Lucres*, Theocritus, thirteenth satire of Juvenal, etc. The *Lucretius* was long ranked by the side of Dryden's *Iergil* and Pope's *Homer*.

CREECH, WILLIAM (1745-1815). A Scottish publisher and author. He was born in Edinburgh, and in 1770 was the traveling companion of Lord Kilmaurs, afterward Earl of Glencairn, on the tour of that nobleman through central and western Europe. His publisher's shop in Edinburgh was much frequented by men interested in literary pursuits. Among the works published by him were those of Burns, Blair, Beattie, Cullen, Mackenzie, and other notables of the time. He made a rather poor translation of Horace, and this led Pope, in the preface to his imitation of Horace, to add the couplet

"Plain truth, dear Murray, needs no flowers of speech,
So take it in the very words of Creech."

Burns's poem *Willie's Awa'* was addressed to him.

CREEDE. A city and the county seat of Mineral Co., Colo., about 165 miles (direct) southwest of Denver, on the Denver and Rio Grande Railroad (Map: Colorado, C 4). It is in a narrow gulch on Willow Creek, high up among the mountains, and is engaged exclusively in mining, having been formerly noted for its highly productive silver mines. Since 1903, however, the mining of lead and zinc has been more profitable. Wagon Wheel Gap, Hot Springs, and Antelope Springs are of scenic interest and make the region attractive for tourists. Creede was founded in 1890 by N. C. Creede, who had established a mining claim there the previous year. It was nearly destroyed by fire in 1892, the year of its incorporation. Pop., 1910, 741.

CREEDMOOR. A village on Long Island, in the county of Queens, now included in New York City, 14 miles east of the borough of Brooklyn (Map: Greater New York, G 5). The rifle range located here was founded as a private enterprise by the National Rifle Association and was later acquired by the State of New York. It is now being used by the New York State Armory Commission. Creedmoor is the seat of a State Insane Asylum. Pop., 1914 (est.), 600.

CREED OF PIUS IV. See **PIUS IV.**, **CREED OF CREEDS AND CONFESSIONS** (AS, *orēda*, OF., Fr., Prov., Portug., Sp., It. *credo*, creed, from Lat. *credo*, I believe, the first word of the Apostles' and Nicene creeds). The names given to the authorized expressions of the doctrine of the Church at large, or of the several main sections into which it is divided. Such statements of doctrine sprang up naturally in the course

of the Church's progress. As controversy and discussion arose, the final opinion of the Church was expressed in a clear, definite, and compact form. The great creeds mark the climax of successive controversial epochs in the Church and are the varying expressions of the *Christian consciousness and reason*, in their efforts more completely to realize, comprehend, and express the growing thought of the Church. Each creed was evolved to meet a special need.

We find that the creeds of Christendom increase in complexity, in elaborate analysis and precision of doctrinal statement, as they succeed one another. The first are comparatively brief and simple in sense and form; the last are prolix and largely didactic. From the Apostles' Creed to the decrees of the Council of Trent, or the chapters of the Westminster Confession of Faith, there is a wide change, during which the Christian consciousness has grown from a comparatively simple faith to a body of comprehensive critical opinions.

In the Christian Church creeds may be divided into ecumenical creeds, Oriental creeds, the creeds of the Catholic church after the Reformation, and the creeds of the Protestant churches. Ecumenical creeds are those which arose before the great historic divisions of the Church, and which are recognized as being the expression of the faith of the early united Church, at least in the West. The simplest, and in its original form the earliest, is that called the Apostles' Creed. The name is a misnomer, the result of a late tradition. The early form of the creed is known as the Old Roman Symbol and was used as a baptismal confession in the church at Rome. Its earliest preserved form in Latin is given by Rufinus (c.400), who, in commenting on the creed used in his church at Aquileia, Italy, gives the variations between it and the Roman form. A Greek version is given by Marcellus of Ankyra, in Galatia (336-341). These do not agree exactly. Tertullian and Irenæus, at the close of the second century, give such informal quotations as make it possible to reconstruct the creed used in Rome between 150 and 200. In English such reconstructions are available in McGiffert's *The Apostles' Creed* (New York, 1902) and an article by Harnack, *Nineteenth Century*, July, 1893. The following is from McGiffert: "I believe in God the Father Almighty and in Christ Jesus His Son, who was born of Mary the Virgin, was crucified under Pontius Pilate and buried; on the third day rose from the dead, ascended into Heaven, sitteth on the right hand of the Father, from whence He cometh to judge the quick and the dead; and in the Holy Ghost, and resurrection of the flesh." This earliest symbol seems to have been made to guard the Church against the Gnostic (q.v.) heresies, which were rife in Rome in the second century, perhaps especially against the doctrines of Marcion (q.v.), who held that Jesus was not the son of the Creator of the world, but of a higher God; that he was wholly spirit, and so was not born in the flesh, did not die nor rise in the flesh; and that the Christian resurrection is from the flesh, not in the flesh. The creed, with its omission of all mention of the ministry and teaching of Jesus, affirms exactly the points that the Gnostics denied. (In both Greek and Latin forms it states the resurrection of the flesh, not of the body, as in the English translation.) The most

important of the clauses added before the time of Rufinus were "holy church, and forgiveness of sins." These seem to reflect the Novatian controversy, as to whether the Church could remain holy if it forgave and took back those who had lapsed under the stress of persecution. In the sixth century Rome dropped the use of the Apostles' Creed and put the Nicene Creed in its place as a baptismal symbol. Perhaps this was the better to exclude Arians, who near the end of the fifth century took Rome. Meantime the Roman Symbol lived on, with various changes, in the provinces, and at last, in the time of Charlemagne, was brought back to Rome in its final form, probably from southern Gaul. From here it spread, in the ninth and tenth centuries, throughout the Western church. The first quotation of it in its final form is given in a book entitled *Scorapeus*, by Pirminius, a Benedictine missionary in southern Germany (c.730). Consult Harnack, in Herzog, *Apostolisches Symbolum*, also his *Geschichte der altchristlichen Litteratur* (Leipzig, 1893).

The Nicene, or rather the Niceno-Constantinopolitan, Creed sprang out of the conflict, which had begun even in the second century, as to the explanation of the Christ. From the beginning Ebionitism had looked upon Christ as merely a Jewish teacher of distinction, Theodotus and Artemon openly taught such a doctrine in Rome towards the close of the second century. Others, on the contrary, taught a doctrine which identified Christ with God absolutely in such a manner as to destroy all distinction of persons in the Godhead. Monarchianism, as it was called, which held rigorously and formally to the unity of God, was the ruling principle of both doctrines, opposite as were the expressions it assumed in the two cases.

The controversy thus begun in the second, perpetuated itself in the third, century under various modifications. The problem was to explain the divine nature of Christ. Arius, a presbyter of Alexandria, brought forward the doctrine that Christ, although in a true sense divine, or the Son of God, was yet not the very God. He denied that He was "of the substance of God," or "without beginning"; He was only the highest created being, "promoted" to divinity, but not the same in substance with the Father, nor equal with Him in power and glory. Athanasius, also an Alexandrian, came forward as the opponent of Arius.

The Council of Nicæa was summoned in 325 by Constantine, with the view of settling this controversy, and the Nicene Creed was the result. There were three parties in the council—the Athanasians, or extreme orthodox party; the Eusebians, or middle party, and the Arians, or heretical party. The heretics were few in number and possessed but little influence; but the Eusebians were a strong party, and for some time resisted certain expressions of the orthodox or Athanasians, which seemed to them extreme and unwarranted; but at length the Homousians, as the Athanasians were called, carried the day, and Christ was declared not merely to be of like substance (*homoiousos*), but of the same substance (*homousios*) with the Father.

The creed was formed by extending the Apostles' Creed to include the new definitions. The essential parts are: "And [I believe] in one Lord Jesus Christ, the only-begotten Son of God; begotten of the Father before all worlds,

Light of Light, very God of very God, begotten, not made, consubstantial [of one substance, *homoousios*] with the Father." The Council of Constantinople (381) simply reaffirmed this creed. Later the so-called Niceno-Constantinopolitan Creed arose by the incorporation of the Nicene Creed in the baptismal confession of the Church at Jerusalem, and was erroneously recognized by the Council of Chalcedon (451) as the creed of Constantinople. It adds definitions as to the Holy Spirit. "Lord and Giver of Life, proceeding from the Father [Latin form adds "and the Son" (see *FILIOQUE*)] who with the Father and Son together is worshiped and glorified, who spake by the prophets." It also adds the word "one" to the definitions of the Church and of Baptism, putting the latter, "We confess one baptism for remission of sins." See *NICENE CREED*.

The Nicene Creed affirmed the full divinity of Christ, but left undefined the relation of His human nature to His divine nature. A series of controversies arose (see *CHRISTOLOGY*) which finally issued in the creed of the Council of Chalcedon (451). This creed affirms that Christ "is consubstantial with the Father according to His Godhead, and consubstantial with us according to His manhood—two natures concurring in one person and one substance." This was the final statement of a full and complete humanity and divinity of Christ.

This series of creeds still leaves a certain subordination of Christ to the Father, which was always congenial to Greek thought. The Athanasian Creed does away with the last vestige of subordination and affirms the perfect equality of Christ and the Father. This creed—often called, from its first words, the *Quicumque Vult*—originated in the Latin church, perhaps in Gaul or Africa, after the fifth century. It is first found in its modern form not earlier than the close of the eighth century and was never given full authority in the Greek church. It seems to rest on expressions from Augustine. It is longer than the earlier creeds, and affirms that belief in the equality of the persons of the Godhead is necessary for salvation. "The Father is God, the Son is God, and the Holy Spirit is God, and yet there are not three Gods, but there is one God." See *ATHANASIAN CREED*.

The creeds of the Oriental churches are of less importance. The Orthodox Greek churches, priding themselves on their unchanging adherence to the ecumenical creeds, have found little need for new creeds. The most important are the confession or catechism of Peter Mogila (1640), the Decrees of the Synod of Jerusalem (1672), and the Confessions of Gennadius (1453) presented to the Sultan as a statement of the Christian faith. The Russian standards are embodied in the Longer and Shorter Catechism of Philaret (1839, 1840). After the Athanasian Creed no important symbol was produced in the Western church till the Reformation. At that time new creeds and confessions began to spring up. On the one hand, Protestantism had to defend and state its position and its scriptural authority, and, on the other hand, the Church of Rome, after many delays, gave forth at the Council of Trent (1545-63) an extended creed. This creed was the result of patient and long-continued labor, and is an elaborate statement of the position of the Roman Catholic church on all the subjects of the controversy in the Reformation. It is

divided into Decrees and Canons. The Decrees are the full statements of doctrines, and the Canons following the several Decrees are brief statements and condemnations of the opposing positions, ending with anathemas. The creed is one of the greatest, clearest, and most important statements of religious belief that any of the religions of the world possesses. The *Decrees of Trent*, with the additions made in 1854 and 1870, are the fixed authoritative symbol or confession of faith of the Church of Rome. See *TRENT, COUNCIL OF*.

Of the Protestant churches, the most notable confessions of faith are the Lutheran; the Continental Calvinistic or Reformed; the Anglican, or Thirty-nine Articles of the Church of England, and the Puritan, or Westminster Confession of Faith.

The Lutherans call their standard books of faith and discipline *Libri Symbolici Ecclesiae Evangelicae*, and reckon among them besides the three Catholic creeds, the Augsburg Confession, 1530 (q.v.), the Apology for that confession by Melancthon, the Articles of Smalkald drawn up by Luther, 1537, Luther's catechisms, 1529, and, in some churches, the Formula of Concord, 1576, or the Book of Torgau.

The most important of these is the Augsburg Confession, which is a statement, clear in expression and moderate in tone, of the points on which the German reformers agreed with and differed from the Roman church and also on which they differed from the Zwinglians and the Anabaptists. It touches on practically all the points regarded as important to Christian belief in that period.

The Reformed (Calvinistic) churches produced over 30 creeds. Most of these were either local or were superseded by later creeds. No one has the universal authority among the Reformed churches that the Augsburg Confession has among the Lutherans. The First Helvetic Confession (1536) was the earliest reformed creed of national authority, but was superseded by the Second Helvetic Confession (1566). These represent the Zwinglian theology of the Swiss reformers. The Gallican Confession (1559) is based on a first draft written by Calvin, and was the creed of the French churches. Netherland Calvinism produced the Belgic Confession (1561), the Canons of the Synod of Dort (1619), against the Arminians, whose *Remonstrance* is in the form of a brief creed (1610). Calvinism in Germany issued the Tetrapolitan Confession (1530) and the Heidelberg Catechism (1563). These creeds are authorities in the Dutch and German Reformed churches.

England has produced two important creeds. For the *Thirty-nine Articles* of the Church of England see *ARTICLES, THE THIRTY-NINE*. They were originally 42 and are supposed to have been chiefly composed by Cranmer. In 1571 they were revised and approved by Convocation and Parliament. The Lambeth Articles, 1595, and the Irish Articles, 1615, became of great importance as affecting essentially the contents of the next great creed, the Westminster Confession of Faith. This was the product of the great Puritan agitation of the seventeenth century. It was produced by the Westminster Assembly (q.v.), was completed in the third year of the Assembly's sessions (1646), and laid before Parliament in the same year. It was approved by the General Assembly of the Church of

Scotland in 1647, and again in 1690, taking the place of the Scottish Confession, a Calvinistic creed which had been the standard from 1560 to 1688.

The Confession of Faith is the latest of the great Protestant creeds, and the creed of the Presbyterian churches throughout the world. It is also one of the most elaborate of all creeds. It extends to 33 chapters, beginning with *Holy Scripture* and ending with *The Last Judgment*. The tone of the doctrinal chapters is that of the later and formal Calvinism which spread from Holland among the English Puritans. The ecclesiastical spirit is Puritan-Presbyterian. "God alone" is declared to be "Lord of the Conscience"; yet the "publishing of opinions contrary to the light of nature, or to the known principles of Christianity," is at the same time declared to be matter of censure by the church and of punishment by the civil magistrate. See COVENANTS.

The work of forming creeds did not, however, cease with Westminster. The great Methodist revival in the eighteenth century led to a revision of the Articles of the Church of England for the use of the newly arisen body; the Unitarian controversy in New England at the beginning of the nineteenth, to the formation of many more or less elaborate church and semi-nary creeds. The Congregationalists of America put forth a new creed in 1883, the Presbyterians of England one in 1900, and the Northern Presbyterian Church of the United States in the General Assembly of 1902 adopted the revision of certain articles of the Confession of Faith and a declarative statement of 16 articles, which was substantially a new creed. The best work on the subject is. Schaff, *Creeds of Christendom* (3 vols., New York, 1877-78), history and texts. Consult also Winer, *Comparative View of the Doctrines and Confessions of the Various Communities of Christendom* (Edinburgh, 1873); Green, *The Christian Creed and the Creeds of Christendom* (London, 1898); Curtis, *History of Creeds and Confessions* (Edinburgh, 1911).

CREEK CHUB. The horned dace. See DACE.

CREEK FISH. See CHUB SUCKER.

CREEKS (so called from the numerous creeks running through their land), or MUSCOGEE, *mûs-kô'gê* (Algonquin *maskoki*, creeks). An Indian confederacy, formerly holding the greater portions of Alabama and Georgia, and second in importance among the Gulf tribes only to the Cherokee. The ruling tribe was the Muscogee, whose language was the court language, besides which there were the Alabama, Hitchitee, Koa-sati, and others of the same Muskogean stock, with the Uchee and Natchez (q.v.), and a considerable incorporated band of Shawano. The Seminole of Florida were an offshoot from the Muscogee confederacy. They were agricultural, but warlike, living in villages of log houses, plastered on the outside with clay, and arranged in a rectangle about a central space reserved for public ceremonies, chief of which was the annual "buck," or green-corn dance. In the Colonial wars and during the Revolution they generally adhered to the English side. They made a treaty of peace with the United States in 1790, but in 1813, instigated by the English, again took up arms against the Americans, beginning hostilities by the terrible massacre of Fort Mims. They were completely crushed by General Jackson in a brief but bloody campaign,

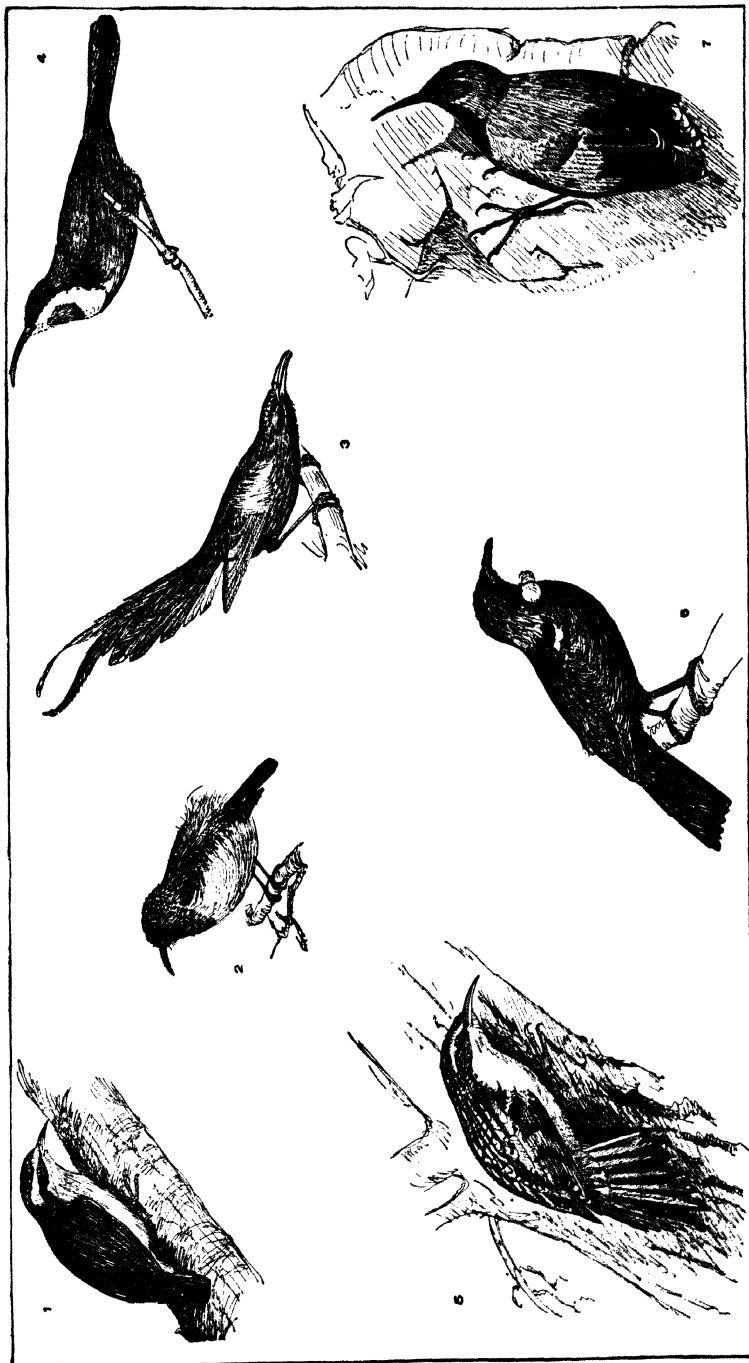
in three battles in which they lost respectively 200, 300, and 800 warriors killed. Utterly broken, the Creeks were compelled to sue for peace, which was granted only on submission to a peremptory "demand" for the surrender of more than half their ancient territory. Other cessions quickly followed, until in 1832 they sold all their remaining territory and agreed to remove beyond the Mississippi to their present habitat in Oklahoma. A few small groups, however, still reside in Alabama and other States. Like the other Southern tribes, they were divided in sentiment during the Civil War and suffered severely in that struggle. Under the name of the "Creek Nation" they formerly conducted an autonomous government, similar in form to that of the Cherokees (q.v.). In 1910 the Creeks proper numbered 6945. See MUSKOGEEAN STOCK.

CREELEMAN, JAMES (1859-1915). An American editor and newspaper correspondent, born in Montreal, Canada. He was first associated with the New York *Herald* (1877) and eventually became editor of its London and Paris editions. During the war between China and Japan he was correspondent for the New York *World* in 1894, and in the Turco-Greek War for the New York *Journal* in 1897, and thus paper he also represented at Santiago during the Spanish-American War, where his gallant conduct met with wide and well-deserved recognition. He was a voluntary aid on General Lawton's staff during the Philippine insurrection. From 1900 to 1906 he was a special and editorial writer on the New York *World*, and from 1906 to 1910 was associate editor of *Pearson's Magazine*. He was a member of the New York Board of Education (1911-12) and president of the Municipal Civil Service Commission (1911-13); and during the following year covered important political assignments for the *Evening Mail*. His publications include: *On the Great Highway: Wanderings and Adventures of a Special Correspondent* (1901); *Eagle Blood* (1902); *Why We Love Lincoln* (1908); *Diaz, Master of Mexico* (1911).

CREEP (from *creep*, AS. *crēopan*, Icel. *kriþa*, OHG. *chrochan*, Ger. *kriechen*, to creep). A miner's term for the depression which takes place in underground workings from the removal of beds of coal or ore. Masses of the coal seam, like huge pillars, are left by the miners for the support of the superincumbent strata; the pressure, however, of these beds is so great that in course of time the roof gradually sinks, or, as is more frequently the case, because of the roof consisting of hard rock, the softer shale pavement rises up, until the intervening spaces between the pillars, left by the removal of the coal, are filled up. A consequent depression takes place in the beds above, as also an alteration of the surface level. But this, being so gradual, is seldom noticed, except when it is made evident from the accumulation of surface water, or in districts where railways pass over the coal fields. The term is also used in geology to designate the movement of soil or rock outcroppings down a slope.

CREEPER. A name very generally applied to any bird, especially if of small size, which seeks its food by running or creeping about upon the trunks of trees. It is more properly applied to the members of the family *Certhiidae* and especially of the genus *Certhia*. They have

CREEPERS



1. BANANA QUIT (*Cereba bahamensis*).
2. NATAL COLLARED SUNBIRD (*Anothreptes collaris*).
3. HAWAIIAN OO (*Acrucercus nobilis*).
4. SLENDER-BILLED HONEYEATER (*Acanthorhynchus tenuirostris*).
5. AMERICAN BROWN CREEPER (*Certhia familiaris americana*).
6. PARSON BIRD (*Prostemadera novae zealandiae*).
7. ALPINE WALL-CREEPER (*Tychodroma muraria*).

a slender, arched, and pointed bill; a long, narrow, sharp-pointed tongue, jagged near its tip; the tail rather long, and the tips of the tail feathers firm and pointed, extending beyond the webs. The feet are rather slender; the hinder toe about as long as the other toes. Of this conformation of feet and tail great use is made in climbing trees, the stiff feathers of the tail being employed for support. Creepers display great agility in clambering, often back down, about the branches, and probe every cranny for hiding insects or insect eggs. They make their nests in crevices in trees, old woodpeckers' holes, etc. Although the family is large, it is doubtful if the genus contains more than one true species, the common streaked-brown creeper (*Certhia familiaris*), a bird found in all temperate parts of the Northern Hemisphere, wherever wood abounds. In the United States the word "creeper" is very generally used as a part of the name of several warblers, as the pine-creeping warbler (*Dendroica pinus*) and the black-and-white creeper (*Mniotilta varia*). In Jamaica the name is given to a small species (*Certhiola bahamensis*), otherwise known as "banana bird," because it frequents and nests in the banana trees. See HONEY CREEPER; TREE CREEPER.

CREEPING PLANTS. Plants whose stems run along the surface of the soil and root at intervals. See STEM; VEGETATIVE PROPAGATION.

CREESE, or CREASE. See KRIS.

KREFELD, krä'fält. See KREFELD.

CREIGHTON, krä'ton, JAMES EDWIN (1861-). An American philosopher. He was born at Pictou, Nova Scotia; graduated from Dalhousie College at Halifax, N. S.; studied in Germany and received the degree of Ph.D. from Cornell University in 1892. He became connected with *The Philosophical Review* in its second year (1893), first as coeditor and subsequently as editor, he was also chosen the American editor of *Kant-Studien*. In 1895 he was appointed professor of logic and metaphysics in Cornell University, after having served in that institution as instructor and associate professor for six years. He helped to organize the American Philosophical Association and was its first president (1902-03). He published *An Introductory Logic* (1898) and some English translations of German philosophical and psychological works, and contributed frequently to philosophical journals. In 1900 he received the honorary degree of LL.D. from Queen's University, Canada.

CREIGHTON, krä'ton, MANDELL (1843-1901). An Anglican prelate and historian. He was born at Carlisle, Northumberland, graduated from Merton College, Oxford, in 1866, with the highest honors, and continued there as tutor until 1873. In 1870 he became deacon, in 1873 priest, and in 1875 assumed the college living at Embleton in his native shire. He was appointed rural dean of Alnwick in 1879, honorary canon of Newcastle in 1882, and professor of ecclesiastical history at Cambridge in 1884. In 1891 he became Bishop of Peterborough and remained there until 1897, when he was transferred to the see of London and was made a Privy Councillor. He represented Emmanuel College, Cambridge, at the celebration of the two hundred and fiftieth anniversary of Harvard University (1886) and in 1896 attended the coronation of Czar Nicholas II as delegate of the Church of England. Dr. Creighton will be remembered as

one of the ablest bishops of the see of London. His stanch high-churchmanship, striking and piquant personality, and incessant activity combined to make him the most notable Anglican divine of the nineteenth century. His historical writings are of great importance. Among them are: *The Age of Elizabeth* (1876; 14th ed., 1899); *History of the Papacy during the Period of the Reformation* (4 vols., 1882-87); *Cardinal Wolsey* (1888). *History of the Papacy from the Great Schism to the Sack of Rome* (new ed., 6 vols., 1907); *Life of Simon De Montfort* (new ed., 1905); *Historical Essays and Reviews* (1902); *Historical Lectures and Addresses* (1903). Consult his wife's *Life and Letters of Mandell Creighton* (2 vols., London, 1903; new ed., 1913).

CREIGHTON UNIVERSITY. An institution for higher learning, founded under the auspices of the Roman Catholic church, in 1873, at Omaha, Neb. The University includes departments of law, medicine, dentistry, pharmacy, and the college. There is also a high-school preparatory department. The total enrollment in these several departments in 1914 was 1110, divided as follows: law, 173; medicine, 187; dentistry, 117; pharmacy, 153; college, 112; high school, 374. The faculty numbered 150. The productive funds of the university amount to about \$2,750,000, and the annual income to about \$210,000. The library contains about 50,000 volumes. The president in 1914 was Rev. E. A. Magevney, S.J.

CREIL, krä'y'. The capital of a canton in the Department of Oise, France, on the Oise, 32 miles north of Paris by rail (Map: France, N., H 3). The parish church dates from the twelfth century; a ruined twelfth-century church is situated on an island in the river; and there are remains of a royal castle where Charles V was kept during his madness. Hardware, copper, machinery, bricks, tiles, glass, nails, and pottery manufactures are its chief industries. The Northern Railway has large repair shops, and near by are extensive engineering works. Pop., 1901, 9125; 1911, 10,214.

CREIZENACH, krä'tse-näg, THEODOR ADOLF (1818-77). A German poet and literary historian. He was born in Mainz, the son of Michael Creizenach, a famous Hebrew scholar, studied at Giessen, Göttingen, and Heidelberg, and was one of the founders of the Jewish Reform Society in Frankfort-on-the-Main. He embraced Christianity in 1854 and in 1863 was appointed professor at the Frankfort Gymnasium. He was a versatile writer, his poems, *Dichtungen* (1839) and *Gedichte* (1851), being distinguished by simplicity and an elegiac character. His publication of the correspondence between Goethe and Marianne von Willemer (1878) is a valuable contribution to the literature on the great poet.

CRELINGER, krä'ling-ër, AUGUSTE (DÜRING) (1795-1865). A German actress, born in Berlin. She made her first appearance at the Court Theatre, Berlin, May 4, 1812, subsequently became one of the most famous actresses of her day, and frequently appeared as a star at the leading theatres of Germany as well as in St. Petersburg. Sappho, Lady Macbeth, Iphigenia, Phädra, and Adelheid in *Ötztal Berlichingen* were some of her favorite rôles. She excelled also in comedy parts and was distinguished alike for her beauty, numerous histrionic accomplishments, and consummate

artistic training. Her maiden name was Düring. She was married in 1817 to an actor, Wilhelm Stieh, after whose death in 1824 she became the wife of a Berlin banker, Otto Crelinger.

CRELL, NIKOLAUS. See **KRELL, NIKOLAUS.**

CRELLE, krél'le, AUGUST LEOPOLD (1780-1855). A self-educated German mathematician. He was born at Eichwerder, near Wriezen, and was an architect by profession, but is chiefly known as the founder of the *Journal für reine und angewandte Mathematik* (Berlin, 1826). This journal gave expression to many of the greatest mathematical developments of the nineteenth century. Abel's proof of the impossibility of solving the general equation of the fifth degree by algebraic methods appeared in the first volume. Steiner, "the greatest geometer since the time of Euclid," was a leading contributor, and Möbius intrusted to it the publication of his most important researches. Crelle wrote quite extensively on algebra, trigonometry, the theory of numbers, the theory of functions, and various subjects of mathematical physics. His chief works are: *Versuch einer allgemeinen Theorie der analytischen Facultäten* (1825); *Encyclopädische Darstellung der Theorie der Zahlen* (1843); *Sammlung mathematischer Bemerkungen* (1820-22); *Elemente der Geometrie und ebenen und sphärischen Trigonometrie* (1826-27). He was also editor of the *Journal der Baukunst*.

CREMA, krä'mä. An episcopal city in the Province of Cremona, north Italy, situated on the right bank of the Serio, 25 miles southeast of Milan (Map: Italy, D 2). The cathedral has a Romanesque façade, and the church of Santa Maria delle Grazie has interesting frescoes. The circular church of Santa Maria della Croce, 1 mile from the city, built in 1490, has an octagonal interior adorned with paintings by Campi. Crema also has a ruined castle and a technical school. The chief products of the district are wine, fruit, flax, hemp, rice, and cheese; lace, silk, and linen goods are manufactured here, which are famous throughout Europe. Crema was founded by the Lombards in the sixth century and suffered much during the wars of the Guelphs and Ghibellines. It was besieged, taken, and destroyed by Frederick Barbarossa in 1159-60. Pop. (commune), 1881, 9111; 1901, 9755. 1911, 11,411.

CREMATION OF THE DEAD (Lat. *crematio*, from *cremare* to burn, connected with Goth. *hauri*, coal, Icel. *hyrr*, fire). The process of disposing of the bodies of the dead by reducing them to ashes. Three methods of disposing of the bodies of the human dead have prevailed since the earliest times: simple exposure, burial in the earth, in caves, or in artificial tombs; and cremation. Among the factors which have determined which of these methods should be adopted by a nation or race have been physical conditions, such as the character of the soil and climate and the abundance or scarcity of fuel; sanitary considerations, and religious beliefs. Only the most uncivilized tribes have practiced simple exposure, depending on the elements and the wild beasts to dispose of the bodies of their dead. Such was the practice of the early Colchians, who, we are told, hung dead bodies on the limbs of trees while the Syrians abandoned their dead to wild animals.

Disposal of the Dead among the Ancients and among Uncivilized Tribes. Of the two methods employed by civilized nations, crema-

tion and burial, the former is the one originally prevalent among the Indo-European races. The graves of north Europe throughout the Bronze age contain, not skeletons, but only urns for the reception of funeral ashes. The Egyptians, on the other hand, embalmed their dead; the Jews laid them away in sepulchres; and the ancient as well as the modern Chinese buried them in the earth. The Chinese, influenced by religious doctrine, now, as of old, insist on properly placed graves in their own land, and for this reason corpses are sent home from abroad. They do not have cemeteries specially set apart for the burial of the dead, but may bury them anywhere, and the frequent occurrence of these hallowed spots, which may not be desecrated, has proved a serious obstacle to railway projects. The dry, hot climate of Egypt made the embalming process possible, and the scarcity of fuel made it less expensive than burning. The same natural cause, lack of fuel, may have led to the practice of burial among the Jews and other tribes. Among the ancient Persians the bodies of the dead were exposed to the elements, as is the practice of the modern Parsis, or followers of Zoroaster. It is, however, probable that in some instances, especially in the case of kings, burial with a coating of wax was allowed. The ancient Greeks practiced both cremation and burial, the former being introduced by the Phrygians, and burial by the Egyptians. In Greece only suicides, untethered infants, and persons struck by lightning were denied the right to be burned. Burial was forbidden within the walls of Athens. Among the Romans cremation was the general practice during the latter days of the Republic and through four centuries of the Empire. Many of the early American Indians burned their dead and disposed of their ashes in various ways. Recent excavations in Guerrero, Mexico, showed that the immense population which once inhabited this region incinerated their dead before burying them. The body was placed on a large slab in the bottom of a deep grave. It was then covered with a glowing mass of coals and embers, on top of which was placed another slab, elaborately carved. Two plain slabs were placed above, and after the body was consumed the grave was filled with earth.

Cremation was once common in England and was but slowly supplanted by inhumation. The same is true of the Gallic and Germanic races. It is said that Charlemagne, in his zeal for Christian burial, punished the act of cremation with the death penalty. Cremation is still practiced in India and among some other Oriental nations. In Japan the Shinto sect practices burial, and the Monto sect cremation.

While natural causes undoubtedly had a great influence in determining the method of disposal, especially in very early times, religious belief in the resurrection of the physical man has usually been the chief factor which has caused the spread of the custom of interment rather than the more sanitary method of disposal by fire. The Egyptians, Jews, Mohammedans, and Christians all believe more or less fully in the physical resurrection of the body; and the question arises, whether cremation does not impair the prospect of a future life. With the spread of Christianity burial was substituted for cremation, both in the heart of the Roman Empire and among the converted pagans on its outskirts.

The Roman Catholic church remains actively opposed to cremation. Decrees of Roman Congregations from 1884 to 1892 prohibit burning the bodies of the dead. In 1300 Boniface VIII condemned analogous practices. Some of the reasons why the Roman Catholic church is rigidly opposed to cremation (though her decision relates not to doctrine but to discipline) are that burial conserves an old tradition, that the rituals of cremationists savor of irreligion, and that it is still an unproved thesis that cremation benefits the race more than burial. Its precise position has been defined by one of its clergy as follows: 1. The church is opposed to cremation. 2. If a dying person declares his resolve to have his body cremated, priests will not give him the sacrament nor bury him with Catholic rites. 3. But if the body is to be cremated against the will of the deceased, it may be brought to the church for mass or blessing, or blessed at the home where the deceased died. After the cremation the ashes without any religious service may be deposited in consecrated ground. The priest, however, may not accompany the body to the crematory for any rites, nor even for social or civil reasons. Consult addresses of the late James R. Chadwick, former president of the Cremation Society, Boston.

Many Protestant clergymen are actively in favor of this method of disposing of the dead.

Arguments for and against Cremation. Within the last few decades the conviction has spread that a more rapid and sanitary method of disposal must be substituted for burial, especially in the great centres of population. To find enough land for burial purposes is becoming a more and more difficult matter. If 4000 corpses are crowded into an acre and a mortality rate of 15 per 1000 be assumed, then nearly four acres per 1,000,000 population are required annually to bury the dead. A similar computation of population, death rate, and space required for burial will show that, unless the custom is changed, much of the available space in the vicinity of all large cities will eventually be required for burial purposes.

The sanitary objections to burial are of still greater importance than the economic difficulties. In 1900 Sir Henry Thompson, in an address before the Cremation Society of England, advocated that while cremation remained optional for ordinary cases, it should be made obligatory when death is due to such transmissible diseases as smallpox, diphtheria, scarlet fever, typhoid fever, and tuberculosis. In cases of epidemics and after battles, when there are large numbers of bodies to be disposed of at once, cremation seems especially advisable.

An objection to cremation, in the minds of some, is that trace of the dead is obliterated from the sight of the living. But the condition and ultimate fate of graveyards, especially in the heart of great cities, is a proof that in many cases such memorials are but transitory. In continental Europe an average of 25 years is allowed for the occupancy of a grave, after which, in most cases, the ownership reverts to the municipality and the grave may be opened again. See CEMETERY.

Aside from the sentimental objection to cremation already mentioned, the chief argument against cremation is the medicolegal one, that with the burning of the body possible traces of crime are obliterated. Frederick L. Hoffman,

in a paper on "Cremation as a Life Insurance Problem" (*Sanitarian* for January, 1901), calls attention to this phase of the subject and points out that 64 of the 528 persons cremated at St. Louis, Mo., in 1895-99 died from accidents, violence, or suicide. In view of the number of murders, by poison or otherwise, that are committed to obtain insurance money, it is recommended that very special precautions be taken to ascertain the exact cause of death before issuing a permit for cremation. To meet this difficulty, the Cremation Society of England investigates the conditions of death in the case of every body for whose incineration application is made. It has also secured the services of a distinguished pathologist to make autopsies when necessary.

History of the Modern Cremation Movement. In Great Britain the revival of the practice of cremation was discussed as early as 1658, when Sir Thomas Browne published his *Hydriotaphia, or Urn Burial*. During the early part of the nineteenth century, Dr. Lord, health officer for Hemel Hempstead, continued to agitate the subject, but no practical results were achieved. In 1874 Sir Henry Thompson organized the Cremation Society of London, whose object is to introduce some rapid process of disposal which cannot offend the living and shall render the remains absolutely innocuous. A crematory was erected at Woking, near London, and here the first incineration took place in 1885. The first municipally owned crematory was opened for use at Hull in 1901. The *British Medical Journal* of June 14, 1913, states that the yearly numbers of cremations has doubled since 1904, but the numbers are still insignificant.

In France, after much agitation, a law was passed in 1887, legalizing the practice. Soon after the city of Paris erected a crematory, where cremation is compulsory for certain classes, including all unclaimed hospital dead, the remains from dissecting tables, and dead bodies from streets and sewers. Other crematories have been erected.

In Italy the subject was continually agitated by scientific societies after 1852, and finally the incineration of human dead was made legal by a provision to that effect in the National Sanitary Code. The process has rapidly grown in favor, and there are crematories in most of the larger cities.

In Germany the subject was discussed at scientific meetings almost as early as in Italy, but greater legal difficulties were encountered, and at first little was accomplished. At present Germany leads in the movement. Six crematories were built in 1913, making about 40 in the Empire, at which it is estimated that over 10,000 cremations were performed in 1913.

In the other countries of Europe cremation seems to be gaining ground. There were two crematories in Norway in 1912, where 143 were incinerated. The first crematory in the Netherlands was built in 1913, near Amsterdam. The same year a crematory was built in Cairo, Egypt.

The first place in the United States where the subject of cremation was systematically agitated was in New York, in 1873, but it was not until 1881 that a crematory was built for the use of its population. In the meantime a few cremations were made in private furnaces at Washington, Pa., and Salt Lake City. During the last decade of the nineteenth century the movement grew rapidly, and at the close of the cen-

tury 24 crematories were in operation, at which 13,281 bodies had been reduced to ashes. The latest statistics available are for the year 1911, when the total number of cremations (including those in one Canadian city) had risen to 62,465. These were distributed among 38 crematories at the following places: Boston, Cambridge, and Springfield, Mass.; New York City, Buffalo, Troy, and Waterville, N. Y.; Chicago; Cincinnati and Cleveland, Ohio; San Francisco, Los Angeles, Pasadena, Sacramento, and Oakland, Cal.; Milwaukee, Wis.; Davenport, Iowa; Minneapolis and St. Paul, Minn.; Indianapolis and Fort Wayne, Ind.; Denver, Colo.; Baltimore, Md.; Philadelphia, Lancaster, and Pittsburgh, Pa.; Portland, Oreg.; Detroit, Mich.; St. Louis, Mo.; Seattle and Tacoma, Wash.; Washington, D. C.; Montreal, Canada. It appears that the growth of cremation is most rapid on the Pacific coast, and it is stated that in Oakland and Pasadena the number of incinerations has equaled 50 per cent of the number of deaths. Philadelphia operates the first municipally owned crematory in the United States, here the remains of unclaimed dead and those who die in the pest house are incinerated. In 1913 a contract was let by the national government for the erection of a crematory in the canal zone. The same year a national organization was formed, and the First National Cremation Convention met at Detroit. Hugo Erichsen, M.D., was made president.

Method of Cremation. In the earlier furnaces body and coffin were burned separately, but in the latest furnaces the remains are incinerated in the casket, without handling, as received. A chapel is connected with the crematorium, where services may be held if desired. The casket is then lowered into the incinerating room, and, after metal handles and name plate are removed, introduced into the retort. The heat is so intense that after a few hours only the ashes of the bones remain, all else, including the structure of the casket, having disappeared in light ash or gaseous products. Screws and nails are removed by a magnet, and about four pounds of pure ash remain. This is placed in a metallic receptacle, labeled, and sealed.

Bibliography. A chapter on cremation, treating the subject from the sanitary and economic standpoint, is contained in Baker, *Municipal Engineering and Sanitation* (New York, 1901). Cobb, *Quarter Century of Cremation in North America* (Boston, 1901), includes a complete history and statistics of the movement in the United States, also a bibliography. Consult H. Erichsen, *Cremation of the Dead* (Detroit, 1887); A. G. Cobb, *Earth-Burial and Cremation* (New York, 1892). Freeman, *Crematoria in Great Britain and Abroad* (London, 1906), contains descriptions with diagrams and illustrations of some of the principal crematoria in the world. An introductory chapter contains an historical sketch. The *Sunny Side*, an undertaker's trade publication, contains a department devoted to cremation news and propaganda.

CREMER, krä'mër, AUGUST HERMANN (1834-1903). A German Protestant theologian. He was born at Unna, Westphalia, Oct. 18, 1834; studied at Halle and Tübingen, and since 1870 has been professor of systematic theology at Greifswald. Two of his publications have been translated, *Biblich-theologisches Wörterbuch der neutestamentlichen Gräzität* (1866-67; 9th ed., 1902; Eng. trans., 1872, 3d ed., 1886), and

Ueber den Zustand nach dem Tode (1883; 6th ed., 1901; Eng. trans., 1885); *Des Wesens des Christentums* (1901; Eng. trans., as *Reply to Harnack on "The Essence of Christianity,"* 1903).

CREMER, JACOBUS JAN (1827-80). A Dutch novelist, born at Arnheim. Especially noteworthy are his rural tales in dialect, *Betwische Noellen* (1856). He wrote also the novels: *De Lelie van's Gravenhage* (1851); *Daniel Sits* (1856); *Anna Rooze* (1867); *Dokter Helmond en zijn vrouw* (1870). For Cremer's biography, consult J. ten Brink, *Geschiedenis der Noord-Nederlandsche Letteren* (1887-89).

CREMER, SIR WILLIAM RANDAL (1838-1908). An English advocate of international peace, born at Fareham. He was prominent in English trade-unions in 1860-70. In 1885, as a Liberal, he entered the House of Commons, to which he was reelected in 1886, 1892, 1900, and 1906. To further the cause of universal peace he founded (1887) the Inter-Parliamentary Conferences which have met since 1888 at frequent intervals. He visited the United States repeatedly in the interest of an Anglo-American treaty of arbitration, and in support of the International Arbitration League, of which he was secretary for 37 years, he journeyed through all Europe. He also edited the *Arbitrator*, a monthly devoted to the cause of peace. The Nobel peace prize, which was awarded to him in 1903, he gave as an endowment to the International Arbitration League. He was knighted in 1907.

CRÉMIEUX, krä'myë', ISAAC MOISE (called ADOLF) (1796-1880). A French statesman and philanthropist, born at Nîmes. He studied law, and was admitted to the bar at Aix in 1817. About 1830 he went to Paris, where he soon became famous, particularly in the defense of the political prisoners. He became in 1842 a deputy from Chamon and served till 1848. Under the Republic of 1848 he was elected as deputy to the Constituent Assembly and the Legislative Assembly, and was one of the first seven named by the Chamber on February 24 to form the provisional government, in which he acted as Minister of Justice. On the night of Louis Napoleon's coup d'état Crémieux was arrested and thrown into prison. He was soon released, and voluntarily retired into private life until November, 1869, when he was elected a deputy to the Corps Législatif. On Sept. 4, 1870, he was proclaimed a member of the Government of National Defense, and the following day he was made Minister of Justice. He rendered the famous decree which expelled from their seats the infamous magistrates composing the "mixed commissions" under the Empire. Another decree bearing his name, the Decree Crémieux, naturalized in mass 30,000 of his coreligionists in Algeria. In 1871 he subscribed 100,000 francs towards the payment of the war indemnity for the liberation of the French territory from the Germans. In 1875 he was elected life senator. He was one of the founders of the Alliance Israélite Universelle (qv) and its president from 1863 to 1866 and from 1868 to 1880. Consult Jaquot, *Les contemporains* (Paris, 1867), and Blanc, *Histoire de dix ans* (Brussels, 1846).

CREM'NITZ. See KREM'NITZ.

CREMONA, krä-mō'nä. The capital of the province of the same name in Lombardy, north Italy, situated 48 miles southeast of Milan, in a fertile plain on the left bank of the Po (Map: Italy, E 2). It has broad but irregular streets

and attractive public squares, and a bridge 3100 feet long over the Po; it is formed into an oval by old walls that surround it, and a partly covered canal passes through it. The twelfth-century Romanesque Lombard cathedral has a rich main façade of red and white marble and many mural paintings by masters of the Cremona school. Adjacent is an octagonal baptistery, also of the twelfth century. From the Torrazzo (397 feet), the highest clock tower in north Italy, is a view of the entire course of the Po through Lombardy. Others of its 44 (formerly 87) churches are the richly decorated sixteenth-century San Pietro al Po; the fourteenth-century Sant' Agostino e Giacomo in Braida, with paintings by Perugino and others; the sixteenth-century Santa Margherita, built and decorated by Giulio Campi, Sant' Agata, with four large fine frescoes; and in a suburb San Sigismondo, with frescoes and paintings by Cremonese masters. Also noteworthy are the restored thirteenth-century city hall and the thirteenth-century Palazzo de' Gonfalonieri, and the Palazzo Reale, with natural-history and other collections. A memorial tablet marks the house where Antonio Stradivarius (q.v.) made his violins. Cremonese violin makers who preceded him were the two Anati and Guarneri. Cremona was also famous for its painters, Boccaccio Boccacino, the founder of the Cremona school; Melone, Bembo, the three Campis, and Sofonisba d' Angussola, whose five sisters also practiced the art. Cremona has a seminary, a lyceum, a gymnasium, a school of industrial art, a school for voice culture, a technical school, two theatres, a library of 100,000 volumes, and a chamber of commerce. The town has an active trade by rail and water, markets grain, flax, cheese, etc., and manufactures silk, cotton, and wool fabrics, machinery, and earthenware, and is thoroughly modern. Cremona was colonized by the Romans in 218 B.C. and grew to be an important commercial centre. It was destroyed in 70 A.D. by Vespasian, who afterward helped rebuild it, but it was again laid waste by the Lombards in 605. It became important in the tenth century and in the fourteenth century came into the possession of Milan. Pop. (commune), 1881, 31,788; 1901, 37,693; 1911, 40,436. Consult. Holder-Egger, "Die Annales Cremonenses." *Neues Archiv der Gesellschaft für ältere deutsche Geschichtskunde*, vol. xx (Hanover, 1900); Robaloth, *Cremona e sua provincia* (Milan, 1859); *Guida di Cremona* (Cremona, 1904).

CREMONA, LUIGI (1830-1903). An Italian mathematician, born in Pavia. He participated in the struggle for independence against Austria in 1848-49, later studied at the University of Pavia, obtained a mathematical professorship in Bologna, and in 1873 became professor of higher mathematics in the University of Rome and director of the engineering school of the institution. In 1879 he became senator of the Kingdom of Italy, and was for a short time in 1898 Deputy Minister. His contributions to the study of projective geometry and of graphical statics are important. He introduced these subjects into the curricula of Italian technical schools. His works include: *Introduzione ad una teoria geometrica delle curve piane* (1862); *Le figure reciproche nella statica grafica* (3d ed., 1879); *Elementi di geometria proiettiva* (1873); *Elementi di calcolo grafico* (1874). He was a contributor after 1856, and for many years joint editor, of the *Annali di matematica*

pura ed applicata. Vol. i of an important edition of Cremona's Works was published in 1914 under the title *Opere matematiche, pubblicate sotto gli auspici della R. Accademia dei Lincei* (Milan).

CREMORNE (kre-môrn') GARDENS. A famous resort in London, closed in 1877.

CRENEL, or **CRENELLE**' (OF. *crenel*, notch, embrasure, from ML. *crenellus*, dim. of Lat. *crena*, notch). Any embrasure or opening in the walls of a fortified place; especially the spaces between merlons (q.v.) on a battlemented parapet, from which missiles could be discharged. Hence it is sometimes used to designate a battlement. "Crenellated" is used of a building supplied with crenels. See **BATTLEMENT**.

CRENIC ACID (from Gk. *κρήνη*, *krênê*, fountain), $C_{12}H_{20}O_6$. One of the constituents of vegetable mold, produced wherever leaves and other plant matter are decaying, especially in peat bogs and marshes. Berzelius extracted a mixture of crenic and apocrenic acids from the water of Porla (Sweden). Crenic acid is a pale-yellow amorphous substance of sour taste and somewhat astringent aftertaste. Its salts are soluble in water, in which they are gradually transformed, in part, into salts of apocrenic acid.

CREODONTA (Neo-Lat., nom. pl. of Gk. *κρέας*, *kreas*, flesh + *ὀδούς*, *odous*, tooth). A suborder of extinct mammals, ancestral to the true carnivores, and hence sometimes called *Carnivora* primigenia, and found fossil in the Lower Tertiary rocks. The creodonts comprise primitive or synthetic types of animals that vary in size from that of a weasel to that of a grizzly bear, and that combine the characters of the true carnivorous families in such manner as to render determination of the taxonomic rank of any particular species a matter of some difficulty. The members of the suborder present resemblances to the bears, civets, and dogs among the true carnivores, the genus *Patriofelis* seems prophetic of the Pinnipedia, or seals, and *Mesonius* resembles the carnivorous marsupials of Australia. The more primitive forms show characters possessed also by the Insectivora, Tillodontia, and Condylarthra. Creodont remains are found in the Lower Tertiary of Patagonia, and these are of interest because they resemble the carnivorous marsupials of Australia and New Zealand much more closely than do the North American creodonts. The range of the suborder in both North America and Europe is from the base of the Eocene into the Lower Miocene. During Eocene time the creodonts played that important rôle among land animals which subsequently, during later Eocene and Miocene time, was assumed by the true carnivores. Among the more interesting and important genera are *Arctocyon*, *Hyænodon*, *Mesonyx*, *Oxyana*, *Patriofelis*, *Styolophus*.

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du cretace superieur et du tertiaire de Patagonie," *Anal. d. Museo Nacional de Buenos Aires* (Buenos Aires, 1906); Matthew, "Osteology of Sinopa," *Proceedings United States National Museum* (Washington, 1906); Osborn, "New Carnivorous Mammals from the Fayum Oligocene, Egypt," *Bulletin American Museum Natural History* (New York, 1909). See MESONYX; OXYENA; HYENODON; PATRIOFELIS; MAMMALIA; TRISODON.

CRE'OLE (Fr. *cr  ole*, Sp. *criollo*; probably a negro corruption of Sp. **criadillo*, *criado*, servant, from *cr  ar*, to create, rear). A name properly used in the southern United States and in Latin America to designate the pure-blooded descendants of original French, Spanish, or Portuguese stock. By English writers it has sometimes been incorrectly supposed to mean a mestizo or mulatto; but it cannot properly be applied to any person of mixed race, non-Latin stock, or European birth, neither is it used in speaking of the Canadian French.

CREOLE CASE, THE. An incident in American history which caused some friction between the governments of the United States and Great Britain and was the occasion of an animated debate between the proslavery and antislavery elements in Congress. In 1841, 19 of the 135 slaves on board the American brig *Creole* revolted, while being transported coastwise between Hampton Roads and New Orleans, and securing control, after killing the captain and wounding several others, directed the vessel to Nassau, New Providence, where all those who had not been directly concerned in the revolt were immediately liberated by the British authorities, the others being held for trial, on a charge of murder, in the local courts. Daniel Webster, who was then Secretary of State, demanded the return of the slaves, on the ground that they were legally property, and were on American soil and under the jurisdiction of the United States so long as they were under the American flag, even when on board a ship. They were never returned, however, by the British government. The incident caused J. R. Giddings (q.v.) to offer a series of resolutions in the House of Representatives, on March 21, 1842, declaring that slavery could exist only by positive law of the separate States; that these States had delegated no control over slavery to the Federal government, which alone had jurisdiction on the high seas, and, therefore, that slaves on the high seas became free, and the coastwise slave trade was unconstitutional. The House passed a resolution of censure, and Giddings immediately resigned, but was triumphantly reelected. His resolutions expressed the basis of one phase of the constitutional antislavery agitation. They are given in full in Giddings's *History of the Rebellion* (New York, 1864). The Statute of March 2, 1807, regulating the coastwise slave trade, is in 2 U. S. Statutes at Large, 426. See SLAVERY.

CREOLE STATE. Louisiana. See STATES, POPULAR NAMES OF.

CRE'OLIN (origin uncertain). An unofficial dark-brown, sirupy liquid, of tarry odor, derived from coal tar. It is soluble in alcohol and forms a milky fluid (an emulsion) with water. Different specimens vary considerably in composition and strength, and the careless use of the substance may cause poisoning. It is a good antiseptic, particularly against organisms that bear no spores, and is a powerful deodorizer. In

operative surgery it has the disadvantage that the milky character of the solution makes it difficult to see instruments placed in it. Its chief use is in gynecological affections. It has been given (in small doses) internally for gastric fermentation, dysentery, and typhoid fever.

CRE'ON (Lat., from Gk. *K      r*, *Kre  n*). In Greek legend, the son of Men  ceus, and brother of Jocasta, wife of La  us, King of Thebes. After the death of La  us he assumed the government and offered the crown and Jocasta to the man who should free the city from the Sphinx (q.v.).   dipus (q.v.) accomplished the task and thus unconsciously became the husband of his own mother. After   dipus' fall Creon once more assumed the rule as guardian of the sons of   dipus, Eteocles and Polynices (q.v.). After the death of the brothers Creon again became King, and forbade the burial of Polynices and the Argives. Antigone (q.v.), however, defied Creon and buried her brother's body, whereupon Creon sentenced her to be buried alive. Creon's son H  mon, the betrothed of Antigone, killed himself on her body. This is substantially the story as it appears in the plays of Sophocles. Other versions told how Creon sacrificed a son from the walls of Thebes in order to avert the fall of the city, and how later he gave his daughter Megara to Heracles, who succeeded him on the throne of Thebes.

CRE'OSOTE, or CRE'ASOTE (Gk. *k      s*, *kreas*, flesh + *        *, *s      r*, preserver, from *        r*, *s        r*, to save). An oily liquid produced in the destructive distillation of wood, particularly that of the beech (*Fagus sylvatica* Linn  , natural order Cupulifera). The wood tar obtained at first is subjected to fractional distillation, and the fractions heavier than water are dissolved in caustic potash; the resulting solution is exposed to the air and heated, the resinous matter produced is separated out, and the creosote is set free in the solution by neutralizing with dilute sulphuric acid. To obtain creosote in a state of purity, the process just described of dissolving in potash and liberating with sulphuric acid is repeated several times; as a final step in the purification, the creosote is dried and rectified by distillation. Commercial creosote is liable to contain more or less carbolic acid, whose presence, however, is not very easy to detect; if drops of a sample of creosote do not readily sink in water and do not remain transparent after contact with water for some time, the sample should be considered as suspicious. Pure creosote is almost colorless when freshly obtained, but gradually assumes a darker color if exposed to the action of light. It has a penetrating, smoky odor and a burning taste and is slightly heavier than water, in which it is soluble only to a very limited extent. It is completely soluble in alkalies and mixes readily with alcohol, ether, chloroform, and glacial acetic acid. It is composed mainly of *guaiacol* and *crezol* and has a high refractive power. Creosote acts as an antiseptic and has been used in the preservation of meat—whence its name. At present it is largely used in the treatment of tuberculosis with mixed infection. For this purpose it may be administered in the form of an emulsion with cod-liver oil and other substances; or else a mixture of creosote with alcohol and chloroform may be inhaled by the patient, moderate doses of pure creosote being perfectly harmless and causing no disagreeable symptoms whatever. Creosote was first prepared by Rei-

chenbach in 1832, and Bouchard and Pimbert were the first to apply it to the treatment of tuberculosis. It is also used in bronchitis with profuse expectoration containing the *streptococcus* bacillus, and in fermentative dyspepsia, diarrhoea, and dysentery. The so-called *creosote* oil used for the preservation of timber is derived by the fractional distillation of coal tar, constituting the fraction that distills over between 230° and 270° C., 446° and 518° F. It is composed mainly of phenol (carbolic acid), cresol, naphthalene, and anthracene.

The "creosote plant" (*Larrea mexicana*) produces a substance similar to Indian gum lac and having a strong creosote-like odor; hence the name of the plant.

CREOSOTE BUSH. See ZYGOPHYLLACEÆ.


CREOSOTE OIL. See COAL TAR.

CREOSOTOL, krě'sót-ól' (from *creosote* + -ol), or CARBONATE OF CREOSOTE. A pale-yellow sirupy liquid similar to creosote, but having less odor and taste. It is used in tuberculosis and bronchitis and is better tolerated by the stomach.

CRÉQUI, krá'ké', (CHARLES, MARQUIS DE (1578-1638). A French soldier. He was a prominent officer under Henry IV, in 1622 was appointed a marshal of France by Louis XIII, and fought with great bravery against Spaniards and Huguenots. He died in the siege of Crema. His military ability was highly praised by Saint-Simon and Voltaire. Consult (Chorier, *Histoire du Maréchal de Créquy de Blanchefort* (Grenoble, 1683).

CRE'RAR, JOHN (1827-89). An American philanthropist, born in New York City. He was a merchant in New York and from 1862 in Chicago, where he became head of the firm of Crerar, Adams & Co., and an incorporator and one of the directors of the Pullman Palace Car Company. He contributed \$2,500,000 as an endowment fund for a library in Chicago now known by his name, \$100,000 for a statue of Abraham Lincoln, and bequeathed \$1,000,000 to charitable and religious organizations.

CRE'SAP'S WAR. See DUNMORE'S WAR.

CRESCENDO, krě-shen'dó or krě-sen'dó (It., increasing, pres. part. of *crescere*, from Lat. *crescere*, to grow). In music, a gradual increase of the volume of sound, or change from *piano* to *forte* and *fortissimo*. It is marked thus,  or with the abbreviation *cresc.* The even swell of an organ produces a perfect crescendo.

CRE'SCENT (from Lat. *crescens*, pres. part. of *crescere*, to grow). 1. A representation of the half-moon with the horns turned upward, called a "crescent," is often used as an emblem of progress and success. It is generally spoken of as "the arms" of the Turkish Empire, but is more properly the emblem of the Empire and people. The crescent and star occur in the horoscope of Osman, the founder of the Turkish Empire. The crescent was also a Byzantine emblem, however, and at the present day is frequently to be seen on churches in Russia, generally surmounted with the cross, marking the Byzantine origin of the Russian church.

2. A Turkish musical instrument introduced into the German military bands at the time of the Turkish wars and now in general use in military bands. It consists of a staff surmounted by a cap and supporting several crescent-shaped brass plates upon each of which little bells are hung. The instrument is played by being jingled in time with the music.

3. In heraldry the crescent is used both as

a bearing, or charge, and as a difference, or mark of cadency. In the latter case it designates the second son and those that descend from him. See CADENCY.

CRESCENT, ORDER OF THE. A Turkish order of knighthood. It was founded by Selim II in 1799 after the battle of Abukir, to be conferred on Christians for service to the Turkish state. Nelson was the first man to receive the honor. The order became extinct after half a century. An Order of the Crescent was founded by St. Louis of France in 1269, and twice reestablished by the house of Anjou, reigning in Sicily and Naples. This is also extinct. The crescent and the star in white upon a red background constitute the Turkish flag. It is supposed that the appearance of the crescent in the horoscope of the great Ottoman led to the acceptance of it as the national symbol.

CRESCENT CITY. A name applied to New Orleans because of its situation on a bend of the Mississippi River.

CRESCENTIIS, krě-sen'shi-is, PETRUS DE, or **CRESCENTINI**, krě-shen'tsě, PIETRO (c.1230-c.1310). An Italian agricultural writer, the founder of modern agronomics in Europe. He was born in Bologna, but later sojourned in various cities of Italy, where he frequently acted in the capacity of judge lateral to the podestats. Upon his return to Bologna after an absence of 30 years, during which he made valuable observations on agriculture, he published his famous work, entitled *Ruralium Commodorum Libri XII* (1471). This work has been frequently reprinted and has been translated into Italian, German, and French. His *Scriptores rei rustice* (1735) is famous also. The genus *Crescentia* was named by Linnaeus in honor of the famous author, who was probably the first since the days of the Romans to point out the high value of agricultural science.

CRESCENTINI, krě'shen-tě'ně, GIROLAMO (1766-1846). An Italian singer, born near Urbino, Italy. He studied with Ghibelli at Bologna, made his début at Rome in 1783, and subsequently sang at Leghorn, Padua, Venice, Turin, London, Milan, and Naples. Napoleon, who first heard him sing in 1805, decorated him with the Iron Crown and was his patron from 1806 to 1812. He left Paris on account of vocal disorders, later (1816) becoming professor of singing at Naples. He published in French and Italian a treatise on vocalization.

CRESCENTIUS, krě-sen'shi-ús, JOHN (?-998). Leader (Patricius in 985) of the national party in Rome against the authority of the Emperor in the last quarter of the tenth century. About 991, probably, Crescentius was all-powerful in Rome. With a short intermission, when Otho III visited the city in 996, his rule lasted until 998, when he was beheaded by Otho. In 997 he had driven the Pope, Gregory V, from the city and appointed an antipope. Crescentius was long remembered as the champion of Roman liberty. Consult Gregorovius, *Rome in the Middle Ages*, vol. iii (London, 1895).

CRESCENZII, krě-shen-tsě, PIETRO. See CRESCENTIIS, PETRUS DE.

CRESCIMBENTI, krě'shēm-bě'ně, GIOVANNI MARIO (1663-1728). An Italian critic and poet, born at Macerata, and one of the 14 poets associated with Christine of Sweden in founding the Academy of Arcadia, of which he was the first president (1690). As Arcadia expanded, dur-

ing the 38 years of his presidency, to embrace almost the entire literary set of Italy, Crescimbeni became the high priest of good taste, which was reflected in the pompous ceremonials of the Arcadian branches, the shallow dilettantism of literary production, idealistic sensualism in morals, and arrogant preceptualism in aesthetics. The vast but inaccurate and scattered erudition of Crescimbeni is collected in his *Istoria della volgare poesia* (best ed., Venice, 1730-31, 6 vols.). Though inferior to the best standards of scholarship even in its own time, this work is still of use. Its critical criterion was that of Arcadia: accuracy of imitation, not nobility of substance.

CRES/CO. A town and the county seat of Howard Co., Iowa, about 150 miles (direct) northeast of Des Moines, on the Chicago, Milwaukee, and St. Paul Railroad (Map: Iowa, E 1). It maintains a hospital, has extensive dairying and live-stock interests, and manufactures machinery, cupolas, telephone condensers, electrical supplies, steel corn cribs, lighting rods, furniture, stump pullers, tow, flour, and brick and tile. A "Farmers' Alliance" store is successfully operated here, and there is also a hospital. The city is governed by a mayor and council and owns its water works. Pop., 1890, 2018, 1900, 2806, 1910, 2658.

CRESTLAS (Lat., from Gk. Κρηστας, *Krēstilas*). A Greek artist of the Attic school, born at Cydonia in Crete, who worked in the latter part of the fifth century B.C. He made a statue of Pericles, of the base of which fragments with the artist's signature have been found on the Acropolis of Athens. This is the earliest Greek portrait statue which has been surely identified. From this work seem to be derived the busts of Pericles in the British Museum, the Vatican, and Munich. He also made a statue of a wounded Amazon, which is probably represented by the Capitoline type. (See **AMAZONS**.) Other statues have been claimed as copies of his works, as the Munich Diomedes, and the Athena of Velletri. Consult Furtwängler, *Masterpieces of Greek Sculpture*, trans. by Sellers (New York, 1895), and E. A. Gardner, *A Handbook of Greek Sculpture* (London, 1911).

CRESPIN, krā-spān', JEAN (c.1520-72). A French Protestant author. He was born in Arras, studied law in Louvain and Paris, became advocate in Parliament, 1540, fled on account of his religious opinions to Strassburg in 1545, removed to Geneva in 1548, and carried on the printer's trade there until his death in 1572. His fame rests upon his *Livre des martyrs* (1554), with its continuations or recastings under different names: *Recueil* (1554); *Histoire* (1570); new edition of the whole as *Histoire des martyrs* (3 vols., 1886-89). It was translated into Latin and has been the basis of many similar Protestant martyrologies.

CRESS (AS. *cresse*, *cress*, OHG. *cresso*, *cressa*, Ger. *Kresse*; probably from OHG. *chresan*, MHG. *kresen*, to creep). A name given to many plants, of which the foliage has a pungent, mustard-like taste, and is used as a salad. It is sometimes more strictly confined to the genus *Lepidium*, of the family Cruciferae. The common cress, or garden cress (*Lepidium sativum*), is an annual, a native of the East, frequently cultivated in European and American gardens. It is powerfully antiscorbutic. Virginian cress (*Lepidium virginicum*) resembles the garden cress in its properties and is eaten as a salad, and used as a diaphoretic medicine in North

America and the West Indies. *Lepidium piscidium*, a native of the South Sea Islands, is one of the plants used by sailors for prevention or cure of scurvy. The name "winter cress" is given to species of the genus *Barbarea*, also cruciferous biennial or perennial plants. The common winter cress (*Barbarea vulgaris*) is plentiful in moist pastures and hedge banks throughout Europe and North America. It is occasionally cultivated as a winter salad; in Sweden it is used as a boiled vegetable. Its pungency is combined with some degree of bitterness. Very similar to this, and also occasionally cultivated, is the early winter cress, or American cress (*Barbarea praecox*), a native of Great Britain, the continent of Europe, and North America. The common bitter cress, or cuckoo-flower (*Cardamine pratensis*), is also known by the name of lady's-smock. *Cardamine amara* and *Cardamine hirsuta* are cultivated to a considerable extent in Europe and are also found in America. Watercress (*Nasturtium officinale*) is a perennial aquatic plant, much used in the United States and Europe as a cold-weather salad. It is a native of almost all parts of the world. The leaves have a pungent, bitterish taste, with a little saltiness. The plant is of easy cultivation and grows best in clear, shallow, running water, with a bottom of sand or gravel. Mud is injurious both to its growth and to the flavor of its leaves. For Indian cress, or nasturtium, see **TROPÆOLUM**.

CRESS/SET (OF. *cresset*, Fr. *creuset*, from Oldutch *kruysel*, hanging lamp, dim. of *kruyse*, cup, Icel. *krás*, Ger. *Krause*, Eng. *cruse*). A name given to a great light kindled upon a beacon or watchtower, and also to a lamp or torch, or to a light fixed on a pole. The name owes its origin to the former custom of surmounting beacons by a cross.

CRESSID, or **CRESEIDE**, TESTAMENT OF, and COMPLAINT OF CRESEIDE. POEMS by Robert Henryson, wrongly included in the earlier editions of Chaucer.

CRES/SIDA, or **CRES/SID**. The lover of Troilus in the *Troilus and Cressida* (q.v.) of Chaucer, Shakespeare, Dekker and Chettle, and Dryden, and a type of infidelity. The name is probably a mediæval invention representing Briseis, the daughter of Calchas, the Trojan seer.

CRES/SON. A borough and pleasure resort in Cambria Co., Pa., 75 miles east of Pittsburgh, on the Pennsylvania Railroad (Map: Pennsylvania, D 6). It is situated at an elevation of over 2000 feet and is noted for the beauty of its scenery. Mineral springs add to its attractions as a resort. It has an academy and hotel, lumber, coal, and coke yards, and a brewery. Pop., 1910, 1470.

CRESSON, ELLIOTT (1796-1854). A Quaker merchant and philanthropist of Philadelphia, Pa., who devoted much attention to the emancipation of the negroes from slavery. He was president for some time of the Colonization Society (q.v.), and subsequently as its agent labored to establish the colony at Bassa Cove, on the Grain Coast, Africa.

CRESSWELL, SIR CRESSWELL (1794-1863). An English jurist. He was born at Newcastle, graduated at Emmanuel College, Cambridge, in 1814, and in 1819 was called to the bar. In 1834 he was created King's counsel, in 1842 a puisne judge of the common pleas court, and in 1858 first judge of the newly created probate and divorce court. He was largely employed as an

advocate in important navigation and mercantile cases. Consult E. Manson, *Builders of our Law* (London, 1904).

CRESSY. See **CRÉCY**.

CREST (OF. *creste*, Fr. *crête*, Sp., Portug., *It. cresta*, crest, from Lat. *crista*, comb, tuft, connected with Lat. *crinis*, hair). Though popularly regarded as the most important feature in heraldic emblems, the crest, in the eyes of heralds, is an external adjunct to the shield, without which the bearing is complete, and which may consequently be altered without materially affecting its significance. Occupying the highest place on the helmet, it is the member of the bearing by which the knight was commonly known in battle. From this circumstance it is to the crest that the term *cognizance* (from *cognosco*, to know) is properly given. Its claim to a classical origin is probably better than that of any other portion of coat armor. The helmet, as represented on ancient statues and gems, was frequently adorned with a crest. Sometimes it was of horsehair; at other times a lion or other animal, erect or couchant, was placed on the helmet.

The first crest to be met with in the monuments of English chivalry is that on the great seal of Richard Cœur de Lion. Crests came into general use about the time of Henry III, and were used as marks of distinction by commanders in the holy wars, as they had formerly been by the Roman centurions. For lightness they were often made of stuffed leather, gilt, silvered, or painted—a circumstance which explains their greater size then than in later times, when they were made either of wood or metal. The earliest example of the wreath on which the crest is now invariably placed is that on the monument of Sir John Harsick. It consisted of two pieces of silk, of the colors of the armorial bearings of the wearer, twisted together by the lady who had chosen him for her knight. It is now represented as consisting of two stripes of gold or silver lace, twisted into a circular cord. Its tinctures are always those of the principal metal and color of the arms. It is a rule in delineating the wreath, which is shown edgewise above the shield, that the first coil shall be of metal, and the second of color. Civic, triumphal, and other crowns were used as wreaths, and this practice is supposed to have given rise to the use of coronets.

Consult Fairbairn, *Book of Crests of the Families of Great Britain and Ireland* (Edinburgh, 1892); and for foreign crests, consult Reitstap, *Armorial général* (Gouda, 1884-87). See also **HERALDRY** and the authorities there referred to.

CREST, or **CRESTING**. In architecture, an ornamental finishing in stone, tiles, or metal, running along the top of a wall or the ridge of a roof or surmounting a gable. *Crest tiles*, or, as they are corruptly called, cress tiles, or crease tiles, are frequently in the form either of small battlements or Tudor flowers. See **COPING**.

CRESTED. A term in heraldry. When a cock or other bird has its comb of a different tincture from its body, it is said to be crested of such a tincture, naming the tincture.

CRESTED DOG'S-TAIL GRASS. See **DOG'S TAIL GRASS**.

CRESTLINE. A village in Crawford Co., Ohio, 76 miles southwest of Cleveland, on the Cleveland, Cincinnati, Chicago, and St. Louis, and the Pennsylvania railroads (Map: Ohio, E

4). It is chiefly industrial in its interests, having plow, stove and furnace, pump, and buggy factories, a car manufactory, a woodworking establishment, etc. The water works are owned and operated by the village. Pop., 1910, 3807.

CRESTON. A city and the county seat of Union Co., Iowa, 55 miles (direct) southwest of Des Moines; on the Chicago, Burlington, and Quincy Railroad (Map: Iowa, C 3). It has a public library and Elks, Moose, and Eagle homes. There are extensive machine shops, car works, planing mills, and a cold-storage plant. Creston was settled in 1868 and incorporated the following year. It is governed at present under a charter of 1870, revised in 1890, which provides for a mayor, chosen biennially, and a city council, elected by wards. Pop., 1890, 7200; 1900, 7752; 1910, 6924.

CRET, **PAUL PHILIPPE** (1876-). A Franco-American architect, born at Lyons, France. He was educated at the Ecole des Beaux-Arts, Lyons, and the Ecole des Beaux-Arts, Paris; in 1903 was an architect of the French government; and became in the same year professor of design at the University of Pennsylvania. He received the Paris prize in 1896, the Rougevin prize in 1901, grand medal of the Ecole des Beaux-Arts of Paris in 1901, and the gold medal of the Salon des Champs Elysées of Paris in 1903. He was architect of the Pan-American Union building at Washington and of the Valley Forge memorial arch.

CRETACEOUS (krá-tá'shūs) **SYSTEM**, or **CHALK FORMATION** (Lat. *cretaceus*, chalky, from *creta*, chalk). A term applied to a series of strata underlying the Tertiary and resting on the Jura-Trias, the name being derived from the chalk beds which form such a prominent member of the Cretaceous in England and France, although such chalk beds are rare in the United States, occurring only in Texas and Arkansas. There exists at times an unconformity between the Upper Cretaceous and the Eocene, or lower member of the Tertiary, especially in the United States. The classification of the Cretaceous presents many difficulties, owing to the variable section which it exhibits in different areas, but European and American geologists are agreed on a division into an upper and a lower member, while for divisions of lesser size local names are employed.

The Lower Cretaceous, designated by some geologists as the Comanchean system, is represented along the Atlantic coast by the Potomac beds, in the northern Gulf States by the Tuscaloosa stage, in Texas and the western Gulf borders by (a) Trinity, (b) Fredericksburg, and (c) Washita stages. The Upper Cretaceous in the Rocky Mountain region has the following subdivisions: (a) Dakota stage, (b) Colorado series, (c) Montana series, (d) Laramie series; while in the Atlantic border States it is divided into (a) Matawan, (b) Monmouth, (c) Rancocas, and (d) Manasquan stages.

The Cretaceous rocks of North America form a belt of increasing width, extending southward along the Atlantic coast from New York, through New Jersey, Maryland, North Carolina, Georgia, and Florida; then around the northern and western shores of the Mexican Gulf, up the Mississippi valley to the mouth of the Ohio, and from Texas northward to the foothills of the Rocky Mountains. They occur also in Nebraska, Kansas, and Iowa. The greatest development of the Cretaceous system is in Wy-

ming, Utah, Colorado, and west of the Sierra Nevada in California. In some portions of these last-named regions it is found at heights of 10,000 and 12,000 feet. It occurs also in Arctic America, near the mouth of the Mackenzie River. The American Cretaceous beds consist of greensand—called also "marl," and much used in New Jersey and elsewhere for fertilizing land—sands of other kinds, clays, shell deposits, and, on the Gulf of Mexico, especially in Texas, limestone or chalk. In New Jersey the formation is 400 or 500 feet thick; in Alabama, 2000 feet; in Texas, over 1000 feet, represented by sands, clays, marls, and chalk; in the upper Missouri basin, more than 4000 feet; and east of the Wasatch, more than 9000 feet.

The rocks of the Cretaceous contain an abundance of both animal and plant remains, for this was a closing period of an era in which reptiles predominated, and, curiously enough, but few or none of the Cretaceous species have continued into the Tertiary. The plants found in the Cretaceous represent angiosperms, which were not found before this era, both dicotyledons and palms, the former including species of the oak, willow, poplar, beech, maple, fig, tulip, sassafras, eucalyptus, and sequoia. Many palms and cycads are found in the Cretaceous of North America. The appearance of the dicotyledons in this formation is rather sudden. The animal remains found include both the smallest and largest forms. There are foraminifera, sponges (which were very common in the chalk), echinoids, many mollusks, especially spirally coiled ammonites, and oysters. The fishes show a continuation of the placoids and ganoids of the former era, but teleosts, or true bony fishes, made their first appearance. There was also an extraordinary abundance of reptiles, including enaliosaurs, dinosaurs, pterosaurs, and crocodiles. Some of the pterosaurs from the Kansas rock measured from 20 to 25 feet in expanse of wing. The sea saurians were from 10 to 50 feet long. Cope describes the clasmosaurs as a snakelike form 40 feet long, with an arrow-shaped head on a swanlike neck that rose 20 feet out of the water. Consequently it could swim many feet below the surface and yet have its head extended into the air for breath. The American rocks supply 40 species of sea serpents. More curious still were the birds with teeth, found in New Jersey and Kansas. (See ICHTHYORNIS.) The mammalian remains were mostly those of lower orders, such as marsupials and monotremes.

The geographical developments in North America during the Cretaceous were great. In the closing stages the sea withdrew from the coastal plains of the Atlantic and Gulf of Mexico. The Appalachians were subjected to renewed uplift after having been planed down by erosion. The interior continental sea was shallowed, and finally obliterated by the uplifting of the land, so that the eastern and western portion of the United States were joined into one continent. This uplift became emphasized towards the end of the Cretaceous, when the Rocky Mountains were formed. Violent volcanic eruptions accompanied this uplift, and the lava flows of the Yellowstone and of many other sections of the west of the United States date from this time.

The economic products include most of the coal and lignite deposits of the Western States. As a coal-making period the Cretaceous ranks second only to the Carboniferous period. Pe-

troleum is found in the Cretaceous strata of Wyoming. Many of the gold and silver bearing fissure veins of the Rockies were formed in the Cretaceous, while other products are fire clays, chalk, greensand, and iron ores.

In Europe the Cretaceous rocks assume great importance. According to Geikie, they may be grouped into two fairly distinct areas, of which the northern includes Great Britain, the lowlands of central Europe, with portions of Silesia, Bohemia, and northern France; while the southern embraces the central and southern part of France, the Alps, and the Mediterranean basin. The northern area is characterized by shallow-water deposits—sandstones, conglomerates, and marls—more or less glauconitic, and passing into a loosely textured limestone or chalk. In the southern basin the typical rocks are massive, compact limestones, which indicate conditions of deeper water and freer communication with the open sea. The entire series of rocks is usually grouped by geologists as follows: Lower Cretaceous—(a) Neocomian, (b) Urgonian, (c) Aptian; Upper Cretaceous—(a) Gault or Albian, (b) Cenomanian, (c) Turonian, (d) Senonian, (e) Danian. The dividing line between the Upper and Lower Cretaceous is regarded by the French geologists as occurring at the top of the Albian. The most conspicuous member of the Cretaceous is the white chalk (Upper Cretaceous) which forms the remarkable cliffs of southeastern England and northwestern France.

Bibliography. Consult: Dana, *Manual of Geology* (4th ed., New York, 1896); Geikie, *Text-Book of Geology* (London, 1903); White, "Correlation Papers, Cretaceous," *United States Geological Survey, Bulletin* 82 (Washington, 1891); Chamberlin and Salisbury, *Geology*, vol. iii (New York, 1907).

CRETE (Lat. *Crete*, Gk. *Kρήνη*, *Krētē*, NGk. *Kpṛi*, *Kriti*, Turk. *Kirit*), or CANDIA. An island in the Mediterranean, situated south of Greece, considered the most southerly part of Europe. It lies between lat. 34° 57' and 35° 41' N. and between long. 23° 30' and 26° 20' E. (Map: Greece, F 6). It is oblong in shape, having a length of about 160 miles, and varying from 6 to 35 miles in width, with an area of 3327 square miles. Its mountainous surface bears some resemblance to that of Greece. The western part of the island is the more elevated, and contains the massive White, or Madaras, Range, rising at Hagia Theodoros to a height of 8104 feet. The central mass of Ida, or Psiloriti, reaches in Stavros 7103 feet. The eastern part is lower, but there are several peaks between 5000 and 7000 feet high. The northern coast is well indented and abounds in good harbors, that of Suda Bay on the northwest coast being one of the best in the Levant. The southern coast is mainly unbroken and inaccessible. There are several rivers, but they run dry during the summer season. There are numerous springs throughout the island. The climate of Crete is one of the most salubrious in Europe. In spite of its mountainous surface, Crete has a soil of remarkable fertility, producing most of the southern fruits and grains. The thick forests which formerly covered the mountains have almost entirely disappeared, but there are still found some trees, such as the cypress, the chestnut, and the olive, cultivated mostly in the lowlands.

The chief products are olive oil, grapes,

oranges, lemons, and other southern fruits. The vine of Crete, which enjoyed such fame in the Middle Ages, has greatly deteriorated. One of the chief manufactured products exported is soap, which is made of olive oil. The commerce is chiefly with Greece, Austria-Hungary, the United Kingdom, Turkey, and Italy. In 1911 imports were valued at 21,359,000 drachmas, and exports at 15,631,000. The chief exports were: olive oil, 5,571,000 drachmas; raisins, 2,395,000; carobs, 1,811,000; southern fruits, 1,516,000; wine, 1,436,000; and soap, 1,138,000 (drachma = 19.3 cents). The principal ports are Canea, Retimo, and Candia. The Bank of Crete was founded in 1899, with a capital of 5,000,000 drachmas, and obtained the privilege of issuing notes for 30 years.

Crete was formerly a Turkish dependency. The inhabitants, in large part Christian, frequently rose against the Turkish authorities, who were supported by a strong Mohammedan minority. A long series of outbreaks culminated in a general rebellion in 1897, which led to the interference of Greece. Thereupon the four Great Powers—Russia, France, Italy, and the United Kingdom—intervened and established an autonomous Cretan government under the suzerainty of the Porte. A constitution, which came into force in 1899, vested the supreme authority in Prince George of Greece as High Commissioner of the Powers. A representative legislative assembly was established, and representatives at Rome of the four Powers were given control of the island's foreign affairs. The constitution as modified in 1907 curtailed the powers of the High Commissioner; under it the Assembly was composed of 65 members elected for three years. In 1906 the Powers gave to the King of the Hellenes the right of naming the High Commissioner in case of vacancy: Prince George resigned, and was succeeded (early in 1907) by Alexander Zaimis, a former Greek premier. In October, 1908, the Assembly declared the union of Crete with Greece, and, in the absence of the High Commissioner, chose a committee of six to govern the island in the name of the Hellenic King. In the following year the Powers decided that a high commissioner be not appointed nor the *status quo* changed. On Oct. 14, 1912, the Prime Minister of Greece declared formally in the Greek Chamber the annexation of Crete.

Revenue is derived chiefly from customs, excise, and monopolies; expenditure is mostly for public works and security, instruction, and finance. In 1910 revenue and expenditure amounted to 6,465,760 and 7,308,632 drachmas, respectively. In 1911, 6,518,594 and 6,792,829. The public debt in 1912 was 4,615,709 drachmas.

Primary instruction is nominally compulsory, but the school enrollment shows only about one pupil for 10 inhabitants. There are a few institutions for secondary education.

Under the Venetians the population of Crete was estimated at about 250,000. A decrease followed the Turkish conquest, but by 1821 the number had risen to an estimated 260,000. Another great decrease resulted from the War of 1821–30, so that an estimate of 1836 placed the population at only 130,000. The census of 1881 showed 279,165 inhabitants (about 205,000 Christians and 73,000 Mohammedans; census of June 17, 1900, 310,056 (269,719 Christians, 33,496 Mohammedans); census of June 17, 1911, 344,001 (307,812 Christians, 27,852 Mohammedans, 487 Jews, and 7850 foreigners). The Christians are almost entirely of the Orthodox Greek faith. It is to be noted that the Mohammedans have rapidly decreased; they, as well as the Christians, are of Greek origin and speak Greek. Of the foreigners about two-thirds were Greeks and about one-sixth Turks. Canea, the capital, had, in 1911, 24,399 inhabitants; Candia (Iraklion), 25,185; Retimo (Rethymmon), 9086.

History. Archaeological discoveries tend to show that the island was settled at a very early period by Phenicians and Egyptians, and that it undoubtedly was a stepping-stone for those who brought the culture of the valley of the Nile to the mainland of Greece. These discoveries have shown also that the civilization known sometimes as "Minoan," sometimes as "Ægean," extended back many millennia before Christ, by 2500 or 2000 B.C. Crete was the dominant power in the Ægean world. Traces of this Cretan civilization extend from Canaan to Sicily. Thus the Greek stories about Minos (q.v.), once regarded as wholly mythical, have been in many ways remarkably confirmed.

One of the earliest historical notices of the island is that embodied in the *Odyssey* (xix, 172–179). Here it is spoken of as well populated by various peoples—pure Cretans, Achæans, Dorians, and others. The main element in the population was Greek, but whether Dorian or some other type is uncertain. When the *Odyssey* was composed, Cnosus, Minos's capital, situated in the northern part, was the greatest of the 90 cities of Crete. By the side of Cnosus, the city republics of Gortyna in the south and Cydonia in the northwest rose to great prominence. See *ARCHÆOLOGY*, I, *The Pre-Mycenaean or Minoan Period*, and II, *Mycenaean Period*; CANDIA, MEGALOKASTRON; CNOSSUS; GORTYNA; GOURNIA. MINOS; PHESTUS. For brief summaries of the more important works bearing on the recent discoveries in Crete, see, in addition to the bibliography under *ARCHÆOLOGY*, Shear, "The Discoveries in Crete," in *The Classical Weekly* vol. ii, pp. 242–244 (1909), and id., "Crete and Cretan Archaeology," in *The Classical Weekly*, vol. vii, pp. 82–85 (1914). Consult also *ARCHÆOLOGY* and *CRETE* in *The New International Year Book*, the volumes for 1908–13.

As allies of Mithridates the Great and, later, the Cilician pirates, the inhabitants of Crete came into conflict with Rome, and after a desperate resistance of two years were finally subdued by Metellus, in 66 B.C. On the division of the Empire the island fell to the Byzantine rulers, who held it till the year 823, when it was conquered by an army of Saracens from Andalusia. In 963 the Byzantines drove out the Saracens and reestablished Christianity in the country. Upon the establishment of the Latin Empire of the East, in 1204, Crete was given to Boniface of Montferrat, who sold it to the Venetians. These retained their power till 1669, when the Turks, after a blockade lasting 21 years, took the fortress of Candia. The last vestiges of Venetian authority disappeared in 1715, and Crete remained a part of the Ottoman Empire, in spite of various attempts at revolt, in 1770 and in 1821–24. When Greece became independent in 1830, Crete, through the influence of the Allied Powers—England, Russia, and France—was ceded to Egypt; under Mustafa Pasha (1832–52) the island flourished. In 1840 Crete passed again under Turkish control.

The hostility prevailing between the Christian and the Mussulman inhabitants led to repeated revolts and civil wars throughout the nineteenth century. An insurrection lasting from 1866 to 1868 extorted from the Porte the promise of reforms in the government; the pledge remained unredeemed, however, till 1878, when the Sultan, spurred on by the Congress of Berlin, issued a pact or charter, and appointed a Christian Governor-General of the island. This was offset by a Musulman military governor. In 1889 the Christians rose in arms, but the revolt was suppressed, the pact was abrogated, and the island held under military rule till 1894, when the intervention of the Powers led to the reappointment of a Christian governor.

In 1896 a fresh uprising took place. The Sultan gave his consent to the calling of a national assembly, but the Christian insurgents refused to lay down their arms, in expectation of assistance from Greece. In February, 1897, a Greek force landed in Crete and attacked the Turkish troops. But Greece, which had counted on European sympathy in its struggle with Turkey, found itself alone. Austria, England, France, Germany, Italy, and Russia declared that Crete should be granted complete autonomy, but that annexation to Greece was impossible. Italy, France, Russia, and England then established a peaceful blockade of the island and demanded that Greece recall its troops. The refusal of Greece plunged it into war with Turkey, the outcome of which destroyed all hopes of annexation. From 1897 to near the end of 1898 Crete was the scene of continuous violence. At length the Ottoman forces were withdrawn from the island, and in December, 1898, Prince George of Greece was created High Commissioner of Crete for the Powers for three years. A national assembly met and formed a constitution providing for the creation of a legislature and guaranteeing freedom of religion to all inhabitants. Although order was restored, popular sentiment continued to be increasingly in favor of annexation to Greece, and in 1904 the High Commissioner attempted to gain the consent of the Powers to such a step, but without success. There were revolts against the High Commissioner's arbitrary policy in 1904 and 1905; in the latter year a revolutionary assembly proclaimed the union of the island with Greece, and this was followed by a similar proclamation on the part of the regular Chamber. The Powers intervened, and after some desultory fighting the insurgents laid down their arms in November, 1905.

In 1906 Prince George resigned the High Commissionership of Crete and returned to Athens, but the designation of his successor was accorded by the protecting Powers to King George of Greece as a satisfaction to Greek national sentiment. This arrangement lasted six years, but by no means satisfied any of the parties directly interested. The overwhelming majority of Greeks in the Cretan Assembly persisted in treating their island as an integral part of the Greek Kingdom, while the government at Athens, out of deference to the four protecting Powers, was obliged to respect Crete as a shadowy vassal of Turkey. The six years were marked by almost constant political unrest on the island. A renewed proclamation of union with Greece in 1908, the exclusion of Mohammedan deputies who refused to take an oath of allegiance to King George in 1910, and

the election of delegates to represent Crete in the National Assembly which revised the constitution of the Greek Kingdom in 1912, provoked in each case repeated intervention of the Powers.

It was a Cretan leader, Eleutherios Venezelos (q.v.), who in 1910 became Premier of Greece and organized the Balkan League that prepared to wage war against Turkey. A popular uprising of Cretans in March, 1912, put an end to the government that had been forced upon the island by the protecting Powers, and erected in its stead a provisional government, the reception of whose delegates at Athens in October, 1912, was one of the excuses for the outbreak of the Balkan War (q.v.). In that war the Cretans fought shoulder to shoulder with their fellow Greeks of the Greek Kingdom, and by the Treaty of London (May 31, 1913) Turkey renounced all sovereignty over the island. The union of Crete with Greece was formally recognized by the other Balkan states by the Treaty of Bucharest (Aug. 10, 1913).

Consult Pashley, *Travels in Crete* (Cambridge, 1837); Spratt, *Travels and Researches in Crete* (London, 1865); Stillman, *The Cretan Insurrection of 1866-68* (New York, 1874); Mitchell, *The Greek, the Cretan, and the Turk* (London, 1897); Freese, *Short Popular History of Crete* (ib., 1897); Howes, *Crete the Forerunner of Greece* (ib., 1907); Nevor-Batteje, *Camping in Crete* (ib., 1914). See also ΑΡΧΑΙΟΛΟΓΙΑ.

CRETE. A city in Saline Co., Neb., 20 miles southwest of Lincoln, on the Chicago, Burlington, and Quincy and the Missouri Pacific railroads, and on the Blue River (Map Nebraska, H 4). It has a public library and is the seat of Doane College (Congregational), established in 1872, which has a well-equipped observatory. The principal industries comprise flour mills, a creamery, and a voting-booth factory. Settled in 1867, Crete was incorporated as a village in 1871 and is at present governed under a revised charter of 1886. The council is made up of the mayor and representatives from the city wards. The city owns and operates its water works and electric-light plant. Pop., 1900, 2199; 1910, 2404.

CRÉTIN, krá-tán', JOSEPH (1800-57). An American ecclesiastic, first Roman Catholic Bishop of St. Paul, Minn. He was born in Lyons, France, studied there, was ordained a priest, and in 1838 volunteered to assist Bishop Loras, of Dubuque, Iowa, as a worker in the American missions. Vicar-general of Dubuque until 1851, and pastor of the cathedral church of St. Raphael for much of the time, he in that year received episcopal consecration as pioneer Bishop of St. Paul, and entered upon his work with a clergy of nine. He soon established a school, a seminary, a hospital, and an asylum; restored the mission among the Winnebagoes at Long Prairie; founded new missions among the Ojibways; and began a cathedral. In three years he had increased the number of churches from 1 to 29, and to these had added 35 stations.

CRÉTINEAU-JOLY, krá'té'nó' zhó'lé' JACQUES (1803-75). A French author. He was born at Fontenay-le-Comte, Vendée. Of his verse *Les chants romains* (1826) are best known. He wrote for the newspapers and

made special historical studies, particularly of the war of the Vendée. His principal work is *L'Histoire religieuse, politique et littéraire de la Compagnie de Jésus* (6 vols., 1844-46), written from unedited and authentic documents and practically an official history. Consult Maynard's biography (Paris, 1875).

CRETINISM (Fr. *crétinisme*, from *crétin*, idiot, possibly from OF. *chrétien*, *christien*, Fr. *chrétien*, an innocent; or from Lat. *creta*, chalk, suggested by the chalky pallor of cretins; or, more probably, from Rhoeto-Romanic *cret*, dwarf; *cretin*, diminutive). A term applied in a general sense to idiocy or defective mental development, depending upon local causes and associated with bodily deformity or arrested growth. Endemic cretinism is found associated with goitre (q.v.) in the lower Alpine valleys, not only of Switzerland and Italy, but of the Pyrenees, Syria, India, and China. Families moving into goitrous districts are apt to develop goitre in the first generation, cretinism in the second and succeeding generations. In Europe it is rarely met with at a higher elevation than 3000 feet, and haunts chiefly the valleys surrounded by high and steep walls of rock, which exclude the light and limit the free circulation of air. Cretins are either imbeciles with intelligence or idiots, their bodies are dwarfed, with curvature of the spine, pendulous belly, distorted legs, small wide-apart eyes, large mouth, with protruding lower lip, sparse harsh hair, dry skin, low forehead, and irregularly large or small skull.

Cretinism is believed to be due to lime in the drinking water of the districts in which these people live; its immediate cause, however, has been proved to be dependent upon disease of the thyroid gland. Treatment of adult cretins with thyroid gland, administered by the mouth, has resulted in some improvement. Treatment of infant cretins with doses of the gland has resulted in a cure, but the thyroid must be taken as food for life, otherwise the patient relapses into an imbecile and the physical changes return. Sporadic cretinism, or infantile myxedema, is related both to endemic cretinism and myxedema (q.v.). Atrophy of the thyroid gland, due to traumatism, infectious disease, alcoholism, or emotional shock in the parents, results in deficient thyroid secretion; but changes in the pituitary body and the thymus gland have also been observed. The physical and mental changes are like those of endemic cretinism. The skin is coarse and thick, the nostrils broad and flattened. Development is exceedingly slow; the teeth appear late, the child is helpless. In this form of cretinism, a cure, if treatment is begun early, is generally brought about by the continuous administration of thyroid extract, which may be considered a specific in this disease. The improvement wrought in a child within a few months is remarkable. See GOITRE, THYROID GLAND; MYXEDEMA.

CRETONNE, *kré-tôn'* (so named after its manufacturer). Originally a white cloth of French manufacture. The name is now applied to a printed cotton fabric introduced about 1860 and used for curtains or for covering furniture. Chintz (q.v.), so much employed for the same purpose in former years, is a comparatively thin printed cloth highly glazed. Cretonne, however, is generally thick and strong, and with a twilled, crape, basket, wave, or other figure

produced on the loom. When a pattern is printed on this uneven surface, it has a rich, soft appearance. A cretonne is rarely calendered or glazed. The thick weft threads of inferior qualities are commonly formed of waste cotton, and the patterns upon these, though often bright and showy, are, as a rule, printed in more or less fugitive colors. Some cretonnes are printed on both sides with different patterns.

CREÛSA, *kré-ú'sá* (Lat., from Gk. *Κρέουσα*, *Kreousa*). 1. The wife of Jason and daughter of King Creon of Corinth. She was burned to death with her father by the magical poisoned diadem and robe given to her as bridal gifts by Medea. Consult the *Medea* of Euripides. 2. The daughter of Priam and Hecuba and wife of Æneas. She disappeared during the flight from Troy, and when Æneas returned to the burning city to search for her she reappeared, announcing her adoption as a nymph by Cybele, and prophesying his coming good fortune in Italy. Consult Vergil, *Æneid*, ii, 730-794.

CREUSE, *kréz* (Fr., hollow). A central department of France, watered by the river Creuse (Map: France, S., F 3). Area, 2164 square miles. Pop., 1896, 279,366; 1901, 277,831, 1911, 266,188. The streams, with the exception of the Creuse, are insignificant. The climate is cold, moist, and variable, and the soil poor except in the infrequent valleys. The products are rye, wheat, buckwheat, oats, and potatoes, but the raising of cattle forms the chief branch of rural industry. Large quantities of chestnuts and fruit are grown. Coal is mined at Alun and Bourgneuf, while iron, lead, tin, and antimony are found at various places. Carpets, dyestuffs, lumber, shoes, hats, and porcelain are manufactured. The people of Creuse annually migrate in large numbers to find work in various parts of France, making local labor scarce and high-priced. Capital, Guéret.

CREUSE. A river of France, rising in the mountains on the southern border of the Department of Creuse, flowing in a generally north-northwest direction through that department, then in a northerly and westerly direction through Indre, then on the borders of the departments of Vienne and Indre-et-Loire, and falling into the Vienne, a tributary of the Loire, about 12 miles north of Châtellerault, after a course of 150 miles.

CREUTZ, *kroi'tsär*, GUSTAF PHILIP, COUNT (1731-85). A Swedish politician and poet, born in Finland. In 1763 he was sent as Minister to Madrid, and in 1766 as Minister to Paris, where in 1783 he concluded with Benjamin Franklin a commercial treaty between Sweden and the United States. He is chiefly known for the idyl *Atis och Camella* (*Atys and Camilla*, 1761), which, with 10 other poems, appeared edited by Gyllenberg (1795); a new edition (1862).

CREUZER, *kroi'tsär*, GEORG FRIEDRICH (1771-1858). A German philologist. He was born at Marburg and studied there and at Jena. In 1802 he was appointed a professor at Marburg and in 1804 obtained the chair of philology and ancient history at Heidelberg, which he occupied, with great credit, for 44 years. In 1848 he retired to private life. He died at Heidelberg, Feb. 15, 1858. His first and probably his greatest work was *Symbolik und Mythologie der alten Völker, besonders der Griechen* (1810-12).

This treatise, which asserted the symbolical character of ancient mythologies, excited a lively controversy, in which Gottfried Hermann and J. H. Voss appeared as the opponents of Creuzer. His next work in importance was a complete edition of the works of Plotinus (3 vols., Oxford, 1835). With G. H. Moser, Creuzer edited several works of Cicero—*De Natura Deorum* (1818); *De Legibus* (1824); *De Re Publica* (1826); and *De Divinatione* (1828). Between 1837 and 1848 he published a partial collection of his writings in 10 vols. (*Deutsche Schriften*, Leipzig and Darmstadt), the last of which contains his autobiography under the title *Aus dem Leben eines alten Professors*. This was supplemented by his *Paralipomena der Lebensskizze eines alten Professors* (Frankfort, 1858). He was also a prolific writer of essays on archaeological topics. Consult Stark, *Friedrich Creuzer, sein Bildungsgang und seine bleibende Bedeutung* (Heidelberg, 1875), and Sandys, *A History of Classical Scholarship*, vol. iii (Cambridge, 1908).

CREUZNACH, kroits'näda. See KREUZNACH.

CREVALLE (from Sp. *caballa*, horse mackerel, from *caballo*, horse, from Lat. *caballus*, horse), or **CAVALLY**. A name in Florida and the West Indies for various edible mackerel-like sea fish of the genus *Caranx* (family Carangidae), especially the large horse crevallé, or jack (*Caranx hippos*), which is found on both coasts of the warm parts of America and also in the East Indies. It is olivaceous above; sides and below golden; opercle marked with a large black blotch, canines of the lower jaw very prominent. It frequently exceeds 15 pounds in weight and is common in Florida, where it is regarded as a fine food fish. A closely related species (*Caranx caballus*) of the Pacific coast of Mexico is called "cocinero," or "cocinero dorado." See JUREL; Plate of HORSE MACKEREL.

CREVASSE, krá-vás'. See GLACIER.

CREVAUX, krá'vó', JULES NICOLAS (1847-82). A French explorer, born at Lorquin, Lorraine. He made four extensive tours through South America. On the first of these (1877) he visited the interior of Guiana and crossed to the Tumucumac Mountains, the first European to perform that feat. In the following year he visited the valley of the Río Oyapok and, after exploring the Amazon region, returned to Paris. On his next tour, undertaken for the purpose of exploring the left affluents of the Orinoco, he traveled from Bogotá, along the upper Río Negro to the Río Guaviare, which he reached Oct. 20, 1880. In 1882 he journeyed through the valley of the Paraná, explored the Tapajós and several other rivers, and discovered numerous remains of Inca civilization. While endeavoring to ascend the Pilcomayo, in order to visit certain Indian tribes, he was attacked by the Tobas and killed with 19 of his companions; two Bolivians of his escort alone escaped to relate the details of the catastrophe. An account of his explorations has since appeared under the title *Voyages dans l'Amérique du Sud* (1883). A work published by the Geographical Society of Paris, and entitled *Fleuves de l'Amérique du Sud* (1883), is also based upon his researches.

CRÈVECŒUR, krév'kër', JEAN HECTOR SAINT JOHN DE (1731-1813). A French agriculturist, traveler, and author. He was born at Caen and was educated in England. He came to

America in 1754, bought an estate near New York, and married the daughter of an American merchant. He suffered much from the Revolutionary War, and in 1780 was imprisoned three months in New York on suspicion of being a spy. He was sent to England as a prisoner, was exchanged, reached France in 1782, and introduced there the culture of the American potato. On his return to New York (November, 1783) as French Consul, he found his wife dead, his house burned; his children, too, had disappeared, but were finally found in the care of a kindly merchant. He had previously published *Letters of an American Farmer* (1782), which he translated into French and published in Paris. They gave such glowing accounts of the climate and fertility of America that 500 families are said to have left France for the Ohio valley on the strength of his statements. He wrote also a volume on *Potato Culture* (in French), and *A Journey in Upper Pennsylvania and in New York State* (2 vols., in French, 1801). In his most important work, the *Letters*, Crèveœur, though a man of much cultivation, writes as a simple-hearted American farmer. Internal evidence in his writings tends to indicate that he was a Quaker, and the likelihood that he was such is strengthened by his refusal to take any part in the military controversies of the Revolution. His idyllic descriptions of life in the New World, with its approximation to Rousseau's state of nature, transformed crudity into an idealistic mirage that fascinated the philosopher. The *Letters* were translated into German and Dutch, and their idealized treatment of American rural life may perhaps be traced in Campbell, Southey, Coleridge, and Byron—possibly in Chateaubriand. After holding his consulship for 10 years Crèveœur returned to France, dying at Sarcelles. Consult Tyler, *Literary History of the Revolution* (New York, 1897).

CREVILLENTE, krá'vél-yán'tá. A town of Spain, in the Province of Alicante, about 20 miles west-southwest of the city of that name (Map: Spain, E 3). It is picturesquely situated at the foot of the hills some 10 miles from the boundary of Murcia, and has a pretentious town hall and a castle, formerly the possession of the Count of Altamira. Weaving and agriculture are the principal industries. Crevillente is supposed to have been founded by the Romans. Under the Goths it formed part of the Kingdom of Toudmir; it passed into the hands of the Moors, by whom it was held until 1263, when it was taken by Jaime el Conquistador. Pop., 1900, 10,726; 1910, 10,452.

CREW (older form also *crue*, apocopated from *accrue*, OF. *accrue*, *accrue*, increment, from *accreistre*, Fr. *accroître*, to increase, from Lat. *accrescere*, to increase, from *ad* to + *crecere*, to grow). A term used to designate the body of men employed to man a ship, boat, gun, etc. The crew of a full-rigged sailing ship is divided into five parts—forecastlemen, foretopmen, maintopmen, mizentopmen, and afterguard; these are called the *parts of the ship*, and they are again subdivided into port and starboard *watches*, and each watch is again separated into *first* and *second parts port* (or *starboard*). Modern men-of-war without sail power usually have the crew divided according to the arrangement of the battery. It is customary to have as many gun divisions as the arrangement of the battery demands. In ad-

dition to these there are the powder division, engineer's division, and marines.

CREW, HENRY (1859-). An American physicist, born at Richmond, Ohio. He graduated at Princeton in 1882, was fellow in physics at Johns Hopkins University in 1884-87, and instructor in physics at Haverford College in 1888-91. In 1891-92 he was astronomer of Lick Observatory, and in 1892 was appointed professor of physics at Northwestern University (Evanston, Ill.). He was president of the American Physical Society in 1909-10. In 1912 he became president of the Illinois Academy of Science. He also became assistant editor of the *Astrophysical Journal* and published *Elements of Physics* (1899; 3d ed. rev., 1909); *Principles of Mechanics* (1908); *General Physics* (1908; 1911).

CREWE, KR56. A town of Cheshire, England, about 34 miles southeast of Liverpool (Map: England, D 3). It is a central station of several railways and owes its importance to the establishment in 1843 of the immense workshops of the London and Northwestern Railway, which employ more than 7000 men. Crewe was incorporated in 1877. Its affairs are administered by a mayor, a municipal council of 21, and a board of aldermen of seven members. (See GREAT BRITAIN, *Local Government*.) In order not to interfere with its immense passenger traffic, many miles of railway have been tunneled under the city to transport freight. It is also a mail-distributing centre. Its supply of gas and water is provided by the London and Northwestern Railway. It has a modern system of sewerage connected with a sewage farm. Two hospitals, a technical school and school of art, a library, public baths, and a large general market are maintained by the corporation. Among its chief industries are the manufacture of locomotives, railway cars, clothing, and fustian. Pop. (municipal borough), 1891, 32,774; 1901, 42,074; 1911, 44,970.

CREWE, ROBERT OFFLEY ASHBURTON CREWE-MILNES, MARQUIS OF (1858-). A British statesman, educated at Trinity College, Cambridge. He was assistant private secretary to the Secretary for Foreign Affairs in 1883-84, Lord in Waiting to the Queen in 1886, and Lord Lieutenant of Ireland in 1892-95. In 1905-08 he was Lord President of the Council, in 1908 Lord Privy Seal, and in 1908-10 Secretary of State for the Colonies. He became Secretary of State for India in 1910, again Lord Privy Seal in 1912, and also His Majesty's Lieutenant for the County of London in the same year. He received the Oxford D.C.L. in 1912. Besides several articles on Ireland, he is author of a volume of *Stray Verses* (1889-90; 2d ed., 1893).

CREYTON, KRä'ton, PAUL. A pseudonym of J. T. Trowbridge.

CRIB. See FOUNDATION.

CRIB/BAGE (from *crib*, rack, Ger. *Krippe*, OHG. *krippa*, also *chripfa*; connected with MHG. *krebe*, basket, which is probably related to Lat. *corbis*, basket). A game of cards, which can be played by two, three, or four persons, but is mostly played by two with a pack of 52 cards. When four persons are engaged, they take sides. The value of the cards is: face cards 10, ace one, and the rest as marked. The number of cards dealt is usually five or six. The points are scored on a board, and 61

constitutes game. The players cut for deal; the player who loses the deal takes three points, as a makeweight for the adversary's advantage. Five (or six) cards in alternate succession are then dealt, the rest of the pack being placed face downward on the table. The players gather up their cards, inspect them, and select two to place them on the table face down. These cards are called "the crib" and become the property of the dealer. The nondealer then cuts the remainder of the pack, and the dealer turns up the top card. The play then begins, the player announcing the value of each card as he plays it: thus, suppose it is a king, he calls 10—the next player says, e.g., 8; then another card is played by the first player, and so on until the whole amount reaches 31, or as near it, without exceeding it, as can be accomplished. The details of counting the points made in play are too intricate to exemplify in a general description. After the play of the hand is completed, each player counts all the fifteens he can by any combination make out of the cards he holds in conjunction with the "turn up" card. Then the dealer takes up the four cards thrown out for the "crib" by the two players as already mentioned, and counts them in the same way in conjunction with the turn up or start card. Each player is entitled, in addition to the points made in play or in crib, to count "pairs," "pairs royal," "double pairs royal," and for the knave ("his nob's") as well as to count sequences—three or more cards following in successive numbers—and flushes, when all the cards in crib are of the same suit. Consult: Cady, *Cribbage* (New York, 1897); "Aquarius," *Piquet and Cribbage* (London, 1883); *Foster's Complete Hoyle* (New York, 1909).

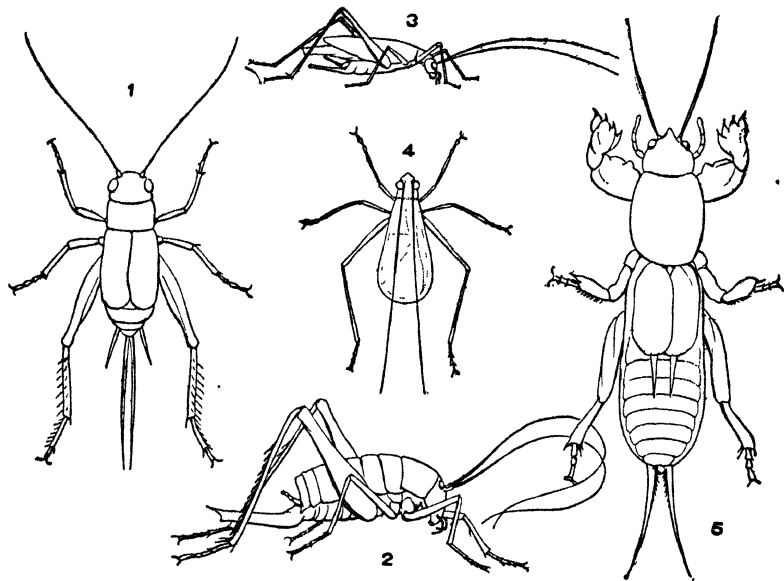
CRIB'ING, or CRIB BITING. A bad habit, met with especially in the lighter breeds of horses and those spending a considerable amount of time in the stable. The act consists in the animal seizing with his teeth the manger, rack, or any other such object, and then arching the neck, giving a grunt, and apparently swallowing air, and is technically called "wind sucking." Cribbing springs often from idle play, may be first indulged in during grooming, especially if the operation is conducted in the stall, and the animal be needlessly teased or tickled, is occasionally learned, apparently, by imitation from a neighbor; and in the first instance is frequently a symptom of some form of indigestion. Its indulgence may be suspected where the anterior edge of the front teeth is worn off, and will soon be proved by turning the animal loose where he can find suitable objects to lay hold of. It usually interferes with thriving and condition and leads to attacks of indigestion. It can be prevented only by the use of a muzzle or throat strap, by covering the mangers and other stable fittings with iron, or by using box stalls without any manger or projecting wood.

CRICHTON, KRi'ton, JAMES (1560-82), called THE ADMIRABLE CRICHTON. A Scotchman famous for his versatility and his universal accomplishments. He was the son of Robert Crichton, of Elick, Dumfriesshire, who was joint Lord Advocate of Scotland from 1562 to 1573 and from 1573 to 1581. On his mother's side he claimed descent from the old Scottish kings. He was educated at St. Andrews University. Before he reached his twentieth year

he had, it seems, "run through the whole circle of the sciences," mastered 10 different languages, and perfected himself in every knightly accomplishment. In Paris, Rome, Venice, Padua, and Mantua he achieved the most extraordinary victories in disputation on all branches of human knowledge and excited universal amazement and applause. The beauty of his person and the elegance of his manners also made him a great favorite; while, as if to leave no excellence unattained, he vanquished a famous swordsman in a duel at Mantua (1582). The Duke of Mantua appointed him preceptor to his son, Vincenzo di Gonzaga, a dissolute and profligate youth. On July 3, 1582, according to Douglas Crichton, in his *Admirable Crichton: the Real Character*, Crichton was attacked in the streets of Mantua by six masked men. He

(1866-). A British soldier and explorer, educated at Magdalene College, Cambridge. He became a lieutenant in the British army in 1884. He was a member of Joseph Thomson's exploring expedition to the Atlas Mountains, reached the top of Tizi Likumpt (15,000 feet) in 1888, and after the recall of Thomson had sole charge of the expedition. In 1890 he received a commission in the Bechuanaland Border Police. In 1892 he was taken prisoner by a Matabele impi, and in 1900-02 he served in South Africa. He was promoted lieutenant colonel in 1911. A fellow of the Royal Geographical Society, his writings on exploration include: *In the Heart of the Atlas*, *Two African Cities*; *Across the Veldt to Buluwayo*.

CRICK'ET (OF. *crequet*, Fr. *criquet*; ultimately imitative in origin). Any of the salta-



REPRESENTATIVE CRICKETS.

1. Common black cricket (*Gryllus neglectus*). 2. A wingless cricket (*Cratophylus maculatus*). 3. A tree cricket, the small green or "snowy" cricket (*Eantheus nreus*), female. 4. Same, male. 5. A mole cricket (*Gryllotalpa borealis*).

pushed them so hard that their leader pulled off his mask and disclosed the features of Vincenzo. With an excess of loyalty Crichton threw himself upon his knees and begged the young prince's pardon, at the same time presenting him with his sword, which the heartless youth plunged into the body of his tutor. What degree of truth there may be in the eulogies of his biographers it is impossible to determine, but he is known to have associated himself with the Venetian publisher Aldus Manutius, who is the authority for many otherwise unauthenticated biographical details. W. H. Ainsworth wrote a romance founded on the story of Crichton in 1837. Consult: P. F. Tytler, *The Life of James Crichton* (London, 1819; rev. ed., 1823); Douglas Crichton, *The Admirable Crichton: the Real Character* (ib., 1909); Whibley, *Essays in Biography* (ib., 1913).

CRICHTON-BROWNE, HAROLD W. A. F.

torial insects of the orthopterous family Gryllidae, distinguished from the Locustidae by the cylindrical spear-shaped ovipositor of the female. The family contains three very distinct groups: (1) mole crickets (q.v.), with fore legs developed for burrowing; (2) tree crickets (q.v.); (3) true crickets, including the common field and house crickets. Most of them in all parts of the world are black or of some dull color and are mainly nocturnal. They are herbivorous, and the American black field crickets are most abundant in neglected fields, or where layers of old straw, etc., give them warmth and hiding. They dig holes in the ground and sit there during the day, chirping, as if with contented enjoyment, and going abroad at night; but any disturbance near them will produce instant quiet. Their eggs are laid in the loose soil, chiefly in the autumn, and hatch in the spring, few adults surviving the winters

of cold climates. The commonest species in the northeastern United States (*Gryllus neglectus*) occasionally comes into houses; but the house cricket proper is a European one (*Gryllus domesticus*) which habitually domesticates itself, and is especially fond of the crevices about old-fashioned fireplaces, where its merry chirping has woven itself into the romance and poetry of all Western nations, as a sound suggestive of domestic cheer. This species is now acclimatized in Canada and some of the Northeastern States. The wingless crickets are represented in the United States by a species (*Ceuthophilus maculatus*) common in New England.

The chirping of these insects, which begins in midsummer, is produced by rubbing a filelike ridge of one wing over a scraping surface of the other. Only the males have these organs, and it is generally agreed that the sounds serve either to call or excite the mute females. A certain Sicilian species is said to make a noise audible a mile away. The apparatus and the musical characteristics of the sound have been exhaustively studied by S. H. Scudder, who says that the notes of the black field cricket are pitched at E natural, two octaves above middle C. The songs of other sorts of crickets vary from this, each in its own way. To this same group belong some curious forms of the tropics in which "the front of the head is produced into a leaflike projection." Another group are of very diminutive size and resemble minute roaches; one genus (*Myrmecophila*) dwells altogether in the nests of ants, both in Europe and in North America. Several species have been described. Other Gryllids are among the insects inhabiting caves. Consult Howard and Marlatt, "Principal Household Insects of the United States," in *United States Department of Agriculture, Division of Entomology, Bulletin 4*, N. S. (Washington, 1896). See CAVE ANIMALS and SYMBIOSIS, and compare LOCUST; KATYDID, MOLE CRICKET, TREE CRICKET.

CRICKET (probably from OF *cricket*, stick used as a marker in the game of bowls). The national game of England is played wherever Englishmen have colonized, and in many of Great Britain's possessions, notably in the West Indies, it has become popular with the natives. In America it is played in certain portions of the United States and in the larger cities of Canada. The rules which govern the game all over the world are those made by the Marylebone Cricket Club of London and from time to time are regulated at meetings of this club. This has always been the custom since the club was founded, about the year 1744. Philadelphia, which is the home of cricket in America, has more clubs than any other place in the United States or Canada, and the four larger clubs—Germantown, Belmont, Merion, and Philadelphia—compete annually for the Halifax cup. Two other cups are also competed for by some 15 minor clubs and second elevens from the principal clubs. Cricket in Philadelphia is controlled by the Associated Cricket Clubs of Philadelphia, in an organization composed of three delegates from each of the four large clubs. This organization publishes a periodical, the *American Cricketer*, founded in 1877. The Metropolitan District Cricket League, and the New York Cricket Association, which has assumed more importance of late years, regulate the matches within 20 miles of the city hall

in New York. The other organizations in the United States are the California Cricket Association, the Northwestern Cricket Association, with headquarters in Chicago, and the Massachusetts Cricket Association. International matches are played annually between the United States and Canada, and on several occasions teams from Philadelphia have visited England. In 1912 the Philadelphia Cricket Club made an excellent showing abroad by winning five matches and drawing one out of nine played. Almost annually, in recent years, either an English, Australian, or Irish eleven has visited Philadelphia, New York, and Toronto. The Intercollegiate Cricket League is composed of teams representing the University of Pennsylvania, Harvard, and Haverford.

The game is played between two teams of 11 men each, on a level grass field, but the exigencies of climate in Australia and the Pacific slope of California sometimes necessitate a cement-based, matted stretch. In the centre of the field a wicket is pitched; i.e., three stumps of wood about 1½ inches in diameter and 27 inches high are placed in a line so that with the space between them they cover 8 inches; on the top of these are two light wooden bails. Twenty-two yards in a direct line from and opposite these, three similar bail-topped stumps are erected. A line from each wicket or set of stumps 8 feet, 8 inches in length, with the stumps in the centre, is drawn. This is the bowling crease, beyond which the bowler must not pass when delivering the ball. In front of the stumps, 4 feet from them and parallel with them, another white line is drawn, called the popping crease, within which is the batsman's domain. The bat used must not be longer than 38 inches or wider than 4½ inches. The ball is 3 inches in diameter and weighs about 5½ ounces. An umpire is appointed by each team, and, before starting a match, they settle what shall be considered boundaries and other conditions of play. Then the captains toss for the right to select which team shall go to the bat first. The team which so elects sends two men in, one to each wicket, the other team sends a bowler to one end and disperses the other 10 men about the field in such positions as the captain's knowledge of the kind of bowler and the kind of batter indicates to him as likely to be most efficacious. The umpire then calls "play," and the bowler bowls, not throws, the ball from the end opposite the batter. If it is a ball which the batsman can reach, he either blocks it or hits it to some part of the field; if he thinks he can run to the opposite wicket and the other batsman change places with him before the ball is returned and either wicket thrown down with it, he runs; and a "run" is scored each time the batsmen cross each other. The bowler bowls four, five, or six balls (four in a three days' match) from one end, and then the ball is handed over to a second bowler, who bowls an equal number of balls from the opposite end. The batsman may be put out in any of the following ways: if he fails to defend his wicket and the bowled ball knocks off the bails ("bowled"); a fielder catches a batted ball before it touches the ground ("caught"); should the batsman fail to have his bat or any part of his person within the popping crease before his wicket is thrown down with the ball ("run out"); if he steps out of his ground to play a ball, misses it, and the

wicket keeper throws his wicket down with it before he can step back ("stumped"); if, when a straight ball has been bowled to him, which in the judgment of the umpire would have hit his wicket had he not prevented it by interposing any part of his body except his hand ("leg before wicket"); if in playing at the ball he knocks down his own wicket ("hit wicket"); or if he willfully obstructs the fielders. When a batsman is put out, another takes his place, and the game proceeds until the tenth man is out. Then, there being no more batsmen to come, the eleventh man's innings comes to an end, he being "not out." The total number of runs made off the bats, with a few penalties added which it is not necessary to detail here, make up that side's score. Then the other side goes in to bat. Each eleven has normally two innings taken alternately, the total score of each side determining the result of the match.

Lillywhite, *Cricketers' Annual*, and Wisden, *Cricket Almanack*, are the standard authorities on the rules for the current years. Consult: Murdoch, *Cricket* (London, 1893); Lyttelton, *Outdoor Games: Cricket and Golf* (ib., 1901); Prince Ranjitsinhji, *The Jubilee Book of Cricket* (Edinburgh, 1897); Read, *Annals of Cricket* (London, 1897); Spalding's *Cricket Guide* (issued annually); Warner, *Cricket in Many Climes* (Philadelphia, 1901), and *Cricket Across the Seas* (New York, 1903).

CRICKET FROG. A small frog (*Acris gryllus*; northern specimens are variety *crepitans*), abundant throughout the warmer parts of the United States, east of the plains, and noted for its rattling cricket-like cries in spring. (See Colored Plate with TOAD.) It is about an inch long, brownish, with a blackish triangular patch (apex backward) between the eyes, the borders of which are light-colored, continued as a dorsal band to the rear end of the body; throat in spring yellow, and legs barred; but all these colors change with surroundings, as the species possesses the power of metachrosis in a high degree. "The note of this species," says Cope, "may be exactly imitated by striking two marbles together, first slowly, then faster and faster, for a succession of about 20 or 30 beats. The noise cannot be heard at a very great distance. . . . It keeps on the high grass in and around marshy places, seldom if ever ascending trees or bushes. When pursued, it leaps with prodigious agility and hides under water." Their eggs are deposited in April, in little masses attached to the blades of coarse grass. A short time afterward all the great numbers which make the marshes so noisy in April and May die off, so that until the eggs hatch and the young "peepers" develop late in August, the species is practically extinct. Consult Abbott, "Notes on the Habits of the Savannah Cricket Frog," in *American Naturalist* (Philadelphia, 1882), and Dickerson, *The Frog Book* (New York, 1906).

CRICKET ON THE HEARTH (Das Heimchen am Herd). An opera by Goldmark (q.v.), first produced in Vienna, March 21, 1896; in the United States, Nov. 7, 1912 (Philadelphia).

CRICKET ON THE HEARTH, THE. A Christmas tale by Charles Dickens (1845).

CRIEFF, krĕf', A police burgh and health resort in Perthshire, Scotland, on the Earn, 17 miles west of Perth (Map: Scotland, E 3). It is beautifully situated at the foot of the Grampians, near the entrance to the Highlands. It

has a public library and a mechanics' institute. Its healthful climate makes it a summer retreat for invalids, who resort to its hydropathic establishments. There are numerous handsome countryseats in the vicinity. The greatest Scotch cattle market was held here till 1770, when it was removed to Falkirk. Its industries include the manufacture of leather, linen, cotton, and woolen goods. Pop., 1901, 5208; 1911, 5571.

CRILE, GEORGE W. (1864-). An American surgeon, born at Chili, Ohio. He graduated from Ohio Northern University (A.B., 1884) and Wooster (M.D., 1887), and studied also in Vienna, London, and Paris. He was lecturer on the principles and practice of surgery at Wooster from 1893 to 1900, when he became professor of clinical surgery at Western Reserve University. In 1913 he was granted an honorary fellowship in the Royal College of Surgeons. His book, *On the Blood Pressure in Surgery* (1903), is especially important. (See BLOOD PRESSURE.) He published, besides: *Surgical Shock* (1897); *Surgery of the Respiratory System* (1900); *Certain Problems Relating to Surgical Operations* (1901); *Hemorrhage and Transfusion* (1909); *Surgical Anemia and Resuscitation* (1914).

CRILLON, krĕ'yōn', LOUIS BALBIS (or DES BALBES) DE BERTON DE (1543-1615). A celebrated French general, surnamed "L'homme sans peur" and "Le brave." He was born at Murs, in Provence, and was trained for war under François de Lorraine, Duke of Guise, then the model of military chivalry. In 1558 he gave proof of his valor at the siege of Calais and soon afterward at the capture of Guines. He fought against the Huguenots and distinguished himself at the battles of Dreux, Jarnac, and Moncontour. He was at the battle of Lepanto, in 1571, and, though wounded, was appointed to carry the news of the victory to the Pope and the French King. He disapproved strongly of the massacre of St. Bartholomew, but in 1573 he took part in the siege of La Rochelle. He accompanied Henry of Anjou to Poland, and after the latter's accession as Henry III continued faithful to him in his struggle with the Catholic League. Henry IV found in him a sincere friend and adviser, and called him "Le Brave des Braves." After the peace with Savoy Crillon retired to Avignon. Consult Montrond, *Histoire du brave Crillon* (Lille, 5th ed., 1874).

CRIME (OF, Fr. *crime*, It. *crimine*, from Lat. *crimen*, accusation, from *cernere*, Gk. *kribein*, *crinein*, to decide). In law, an offense against the peace, order, and dignity of the state. *Crime* has been more specifically defined as "disobedience to a command or prohibition made with reference to a matter affecting public peace, order, or good government to which a sanction is attached by way of compensation for the injury which the act or omission may have caused to an individual."

The same wrongful act, e.g., assault and battery, may subject the wrongdoer to a criminal prosecution by the state and to a civil action in tort by the injured individual. Such an act is at once a breach of the public peace and an invasion of the injured person's rights. In England and in each of the States of the United States certain offenses are crimes at common law, while others are made so by statute. Criminal offenses against the United States, however, are all of statutory origin. The common-law classification of crimes was into *treason* (q.v.),

felony (q.v.), and *misdemeanor* (q.v.): treason being separated from other high crimes because of its character, its mode of trial, and its punishment, and the chief distinction between a felony and a misdemeanor being that the former occasioned the forfeiture of lands and goods, while the latter did not. The statutory definitions of the various classes of crimes now usually includes treason under the head of felony and makes the distinction between felonies and misdemeanors turn upon the disgraceful or infamous character of the punishment prescribed for the crime, a felony being usually punishable by loss of life or by imprisonment in a State prison for a year at least and by the deprivation of civil rights, while a misdemeanor is punished by fine or by imprisonment in a workhouse or by both.

In order that an act shall amount to a crime, it must be committed with a criminal intent. It is not a crime to take the life of a human being if this is done pursuant to a legal command, as in the case of a sheriff inflicting capital punishment upon a duly convicted and sentenced criminal, nor if it is the result of accident. In neither case does the person causing the other's death intend to commit a wrongful or forbidden act. But criminal intent is not necessarily synonymous with actual intent to become a criminal. A general criminal intent exists when the actor has an intellectual apprehension of the nature of the act which the law pronounces criminal and voluntarily assents to its commission. In most crimes no other intent is required. At times, however, the law requires a specific intent, as in the case of the transfer of one's property with intent to defraud his creditors or sending poison to another with intent to injure him. Here something more than knowingly and voluntarily disposing of the property or sending the poison is necessary to the commission of the crime, viz., the disposition or the sending with the specific intent to defraud or to injure. Insanity (q.v.) relieves its victim from criminal liability when it renders him incapable of forming a criminal intention. Voluntary drunkenness, even when causing temporary insanity, does not so relieve its victim, although it may be taken into account in crimes requiring a specific intent on the part of the actor, in determining whether he did the particular act with the specific intent. Infancy also relieves from criminal liability when the infant is incapable of forming a criminal intent. (See AGE.) Analogous to insanity and infancy, as an excuse for an act otherwise criminal, is coercion or duress (q.v.) when of such a character as to destroy the voluntary nature of the act. See ACCESSORY; PRINCIPAL; PUNISHMENT; also CRIMINAL LAW, CRIMINOLOGY, and the authorities there referred to.

CRIME AND PUNISHMENT. A novel by Dostoyevsky, published in 1866. It is a study in abnormal psychology.

CRIMEA (Russ. *Krim*, *Krym*, Lat. *Chersonesus Taurica*). A peninsula in the south of Russia, forming part of the government of Taurida, and comprising the districts of Perekop, Eupatoria, Simferopol, Yalta, and Feodosia. (Map: Russia, D 5). It is united to the mainland by the very narrow isthmus of Perekop, between the Black Sea and the Sea of Azov, and separated from the peninsula of Taman, on the east, by the narrow Kertch Strait. The Crimea is thus

almost surrounded by water—on three sides by the Black Sea and on the fourth by the Sea of Azov; while a trench 70 feet wide and 25 feet across the isthmus of Perekop cuts it off from the mainland. The Crimea is quadrilateral in shape; but a long, narrow peninsula juts out on the east, which increases the extreme length of the territory from east to west to nearly 200 miles, the breadth being 110 miles. The area is about 9800 square miles. The peninsula is peopled by about 855,000 inhabitants, mostly Turkish-speaking Tatars, Greeks, Russians, Germans, and Jews make up the other constituents of the population. The coast is indented, particularly on the side bordering on the Sea of Azov. It has good harbors and is the seat of a thriving fishing industry throughout its extent. Northern Crimea is a continuation of the southern Russian steppes. The Salgir River divides the peninsula into two distinct regions. Southern Crimea is well watered and fertile. Along the side facing the southeast there is a highland region, the Yaila Mountains, forming the watershed. These mountains rise to a height of over 6000 feet, their most interesting peak being the Tchatir Dag (Tent Mountain), the *Mons Trapezus* of the ancients. The streams rise in the southeast coast highlands, and while a few very short ones flow towards the east and southeast, most of the drainage goes into the Bay of Kalamita, the Gulf of Perekop, and the Sivash or Putrid Sea, which is a portion of the Sea of Azov almost cut off from it by the tongue-like peninsula of Arabat. The northwest section of the Crimea has but little fluvial drainage. The southern district of the peninsula rises with steep slopes from the sea, while spurs and secondary chains extend northward. These are richly wooded, but the beautiful intermediate valleys gradually sink into the uniform and desolate steppe which forms the northern and much greater part of the peninsula. The southern district of the Crimea is well cultivated, and is a favorite resort for Russian society. Many noblemen maintain in it their country-seats, parks and gardens surpassed by none in Europe. The famous Imperial country-seat of Livadia is situated near the southern extremity of the peninsula. Tatar villages, mosques, and Greek convents are to be seen in most picturesque situations among the woods and rocks, with many ruins of ancient fortresses.

The southeast highland region produces a rich and varied flora. On the northern slopes and valleys grow hardy fruit and various forest trees; in the central mountain region are forests of oak, beech, elm, and other deciduous trees of central Europe; while on the higher southern slope the pine occurs, and at lower altitudes the vegetation is Mediterranean in character, and the vine and the olive flourish. Grain of various kinds is produced abundantly, and silk, wax, and honey. Fruit culture is being rapidly developed in the Crimea, under the favorable climatic and soil conditions found in the peninsula. The Yalta district and parts of the Simferopol and Feodosia districts have a heavy yearly output, among which almonds, apricots, medlars, peaches, pomegranates, and quinces grow in profusion. Some small rodents, hares, and foxes are the chief mammals; reptiles and insects are not numerous. Much attention is bestowed upon horses, oxen, and sheep, in which no small part of the wealth of

the country consists. The climate of the Crimea varies considerably for such a slight extent in latitude. The northern part has cold winters and hot summers, while in the southern part the winters are warm and the heat of the summer is tempered by proximity to the sea and the shelter afforded by the mountainous barrier emerging northward.

The chief industry of the Crimea is agriculture. The raising of cereals is carried on mostly by the Russians and the colonists, chiefly Germans, while the Tatars and Greeks are engaged primarily in gardening. Owing to the scarcity of labor and the prevalence of large holdings, agriculture in the Crimea is based on modern lines. Cereals are raised, fruit abounds, and wine of an excellent quality is produced. Tobacco plantations are numerous. The southeastern littoral enjoys a mild and healthful climate and is rich in flowers, shrubs, and flowering trees; here the olive, the pomegranate, and the fig flourish, and the hills are overgrown with fir and pine, beech, oak, and elm. On the open steppes beyond the Yailadagh the grass is parched by midsummer droughts and bitten by winter frosts. Saline lakes yield quantities of salt; porphyry, limestone, and ironstone exist. The rearing of live stock (which includes camels) is extensively carried on. Beekeeping, sericulture, and fishing are important industries. The manufactures include flour, leather, wool, soap, preserved fruits and vegetables, metals, and ships. In the country districts the bulk of the inhabitants are Tatars, height, 1.644 meters, cephalic index, 80. Cleanliness and morality are proverbial among them. Other elements of the population are Russians, Greeks, Armenians, Germans, Karaites, Jews, and Albanians. The two principal cities of the Crimea are Sebastopol, a great fortress and naval station, and Simferopol, the capital of the government of Taurida. An interesting town is Bakhchisaray, celebrated as the ancient capital of the Tatar khans.

History. To the ancients the Crimea was known as *Chersonesus Taurica*, from the Tauri, a mountain tribe of the south, who are supposed to have been the remnants of a Cimmerian people driven out by the Scythians in the seventh century B.C. (See *CHERSONESUS; CIMMERII*.) In the sixth century B.C. the Greeks of Miletus founded flourishing colonies at Nymphaeum, Theodosia, and Panticapaeum (the present Kertch, q.v.). About 500 B.C. these cities, together with several other towns, united to form the Kingdom of Bosphorus, which existed till the fifth century A.D. and embraced, at the period of its greatest extent, the entire peninsula and the eastern coast of the Sea of Azov. The Chersonesus stood in close commercial and social relations with the Greeks of Europe and especially with the Athenians, who imported from the country great quantities of grain and hides as well as many slaves. In 114 B.C. Parades, the ruler of Bosphorus, hard pressed by the Scythians, acknowledged himself the vassal of Mithridates (q.v.) of Pontus. Pharnaces (q.v.), son of Mithridates, who had sided with the Romans against his father, received as a reward from Pompey the Kingdom of Bosphorus. (See *BOSPORUS, KINGDOM OF*.) Subsequently, under the nominal suzerainty of the Romans and later of the Byzantines, the Kingdom of Bosphorus prospered, till about the end, probably, of the fourth century, when it fell before the Huns. The

country, with the exception of the southern coast land, which was held by the Byzantines, was henceforth devastated by a succession of barbarian invasions. About the middle of the seventh century the Khazars, a fierce tribe from the region of the Volga, took possession of the peninsula and established a powerful kingdom there, chiefly remarkable for the fact that the ruler, the entire nobility, and large numbers of the people became zealous adherents of the Jewish faith. In the thirteenth century the country was conquered by the Mongols, and it constituted till about 1430 a part of the Khanate of Kiptchak (q.v.). At the same time the Genoese founded a number of trading colonies on the south coast, which was known as Gothia. Among these were Caffa (Kaffa), on the site of Theodosia, which became a great emporium of the commerce between Europe and Asia. (See *KAFFA*.) After forming a part of the independent Khanate of Krim for about 45 years, the Crimea was conquered in 1475 by the Turks and was ruled by a khan under the suzerainty of the Sultan. In 1571 the Khan raided Moscow and sacked the town. Russian aggressions on the Crimea began in 1735, and in the following year an army under General Munnich laid the country waste. By the Treaty of Kutchuk-Kainardji, in 1774, the Porte was forced to recognize the independence of the Khan. In 1783 the country was incorporated with Russia. In 1854-56 the Crimea was the scene of conflict between the Russian armies and the allied forces of England, France, Sardinia, and Turkey. (See *CRIMEAN WAR*.) Consult: *Antiquités du Bosphore Cimmérien* (St. Petersburg, 1854; reprinted at Paris, 1892); Telfer, *The Crimea and Transcaucasia* (2d ed., London, 1877); Wood, *The Crimea in 1853 and 1894* (ib., 1895); Beauhieu, *The Empire of Tsars and the Russians* (New York, 1893); Minns, *Scythians and Greeks* (Cambridge, 1907).

CRIMEAN WAR. The name given to the War of 1854-56 between Russia on the one hand, and Turkey with her allies, France, England, and Sardinia, on the other. Its cause was the struggle between Russia and Turkey, which broke out in 1853, over the assertion by Russia of a protectorate over the Greek Christians in the Turkish dominions. Coupled with this was a dispute between Russia and France over the guardianship of the holy places in Palestine. The real ground, however, for the attitude assumed by France and Great Britain was resistance to the aggressive policy of the Russian Emperor, Nicholas I. The latter believed that the other Powers of Europe were not in a position to interfere, and saw an opportunity to continue the Russian advance which had Constantinople for its objective. Accordingly, in the spring of 1853 he submitted to the Porte, through Prince Menshikoff, an ultimatum in regard to the Greek Christians and other matters. England and France prepared to sustain the Sultan against Russia and stationed their fleets in Besika Bay. In July the Russian forces advanced into the Danubian principalities. The Vienna Note, prepared by Austria and signed by the neutral Powers as a basis of settlement, was so modified by Turkey as to be unacceptable to Russia, and on Oct. 4, 1853, Turkey declared war. The English and French fleets thereupon passed through the Dardanelles. Though the Turks were at first victorious upon land, the Russian admiral, Nakhimoff, won an important

naval victory at Sinope, November 30; on March 12, 1854, France and Great Britain concluded an alliance with Turkey, and two weeks later they declared war against Russia. Prussia and Austria remained neutral. The allied Western Powers determined to assist the Sultan by a naval expedition against Kronstadt, in the Baltic, and by a combined attack with land forces in the south. The Baltic expedition proved a complete failure, achieving nothing beyond the capture of Bomarsund on August 16.

Early in the summer 20,000 English troops, under Lord Raglan, and 50,000 French soldiers, under Marshal Saint-Arnaud, assembled at Varna, on the Black Sea. Against the advice of the Turks, who wished to drive Russia out of the Caucasus, Saint-Arnaud and Raglan decided upon the siege of Sebastopol. Russia's stronghold and depot in the Crimea. The war was thus narrowed down to a limited sphere and was fought in a long siege and a series of stubborn engagements. The first of these occurred at the river Alma, on Sept. 20, 1854, six days after the landing of the Allies. Saint-Arnaud died on September 29, and was succeeded by General Canrobert. At the beginning of October the Allies began the regular siege of Sebastopol, the defense of which was directed by Todleben. On October 25 the Russians attacked the British at Balaklava (q.v.). The engagement was marked by bad generalship on the British side and by the gallant but ill-advised charge of the Light Brigade. The Russians followed this up with an unsuccessful attack at Inkermann on November 5. The severe winter caused the suspension of active operations, and the English and Turks endured terrible hardships because of the inadequate commissary arrangements. Indeed, had it not been for the energy and patriotism of Florence Nightingale (q.v.), the famous nurse, the British forces would have succumbed in huge numbers. As it was, the mortality from disease in this war was frightfully above the average. During the winter an international conference attempted to adjust matters, but without avail. Austria entered into an alliance with France and Great Britain: but as Prussia could not be drawn into action unfavorable to Russia, Austria refrained from entering into hostilities. Sardinia, on the other hand, joined the Allies in January, 1855, and sent 10,000 men of her new army, under General La Marmora, to the Crimea. (See CAYOUR and ITALY.) The Russians resumed activities in February, assailing the Turkish positions at Eupatoria, but without result. After the death of the Emperor Nicholas and the accession of Alexander II, in March, 1855, Prince Michael Gortchakoff succeeded Prince Menshikoff in command of the Russian forces.

Operations were renewed with great vigor in the spring, the Allies having 174,000 men in the field and the Russians about 150,000. General Pellissier succeeded Canrobert in command in May, and General Simpson succeeded Lord Raglan, upon the latter's death in June. A Russian army, advancing to the relief of Sebastopol, was defeated at the Tchernaya on August 16. From the 19th of August to the 8th of September a terrible bombardment of the besieged city was kept up and was followed on the latter day by a general assault, in which the French took the Malakoff Tower and the British took the Little Redan. Gortchakoff now blew up the southern fortifications, evacuated the city, and retired into the hills. All the parties were ready for

peace, which was signed at Paris, where a congress of the Powers had been in session, on March 30, 1856. The integrity of the Ottoman Empire was guaranteed by the Powers, which also renounced all right of intervention in Ottoman affairs; reforms were promised by the Sultan; Russia renounced her protectorate over the Danubian principalities, and ceded a strip of Bessarabia to Moldavia; the navigation of the Danube was declared free to all nations under the supervision of a commission of members from the bordering states; the Black Sea was neutralized. The Congress united in the Declaration of Paris (q.v.), which laid down certain principles of international law. Consult: Hamley, *The War in the Crimea* (London, 1891), the best short treatment in English. The standard work is Kinglake, *The Invasion of the Crimea* (9 vols., ib., 1863-87); also Russell, *The War in the Crimea, 1854-56* (ib., 1855-56); Marx, *The Eastern Question, 1853-56*, trans. by E. M. and E. Aveling (ib., 1897); Lodomir, *La guerre de 1853-56* (Paris, 1857); Kovalevski, *Der Krieg Russlands mit der Türkei in den Jahren 1853-54* (Leipzig, 1869). Rein, *Die Teilnahme Sardiniens am Krimkrieg und die öffentliche Meinung in Italien* (ib., 1910).

CRIME DE SYLVESTRE BONNARD, *krém de sél'ves'tr' bô'nar'*, LE. A graceful romance by Anatole France (1881). The hero, M. Bonnard, is an old member of the Institute, whose "crime" consists in releasing a young girl from a boarding school in which she was unhappy and bringing about a happy marriage for her.

CRIMINAL CONVERSATION (usually, in law, abbreviated to CRIM. CON.). The technical term for adultery with another man's wife. It is no defense to an action by the husband, in such a case, that the wife freely assented to the defendant's solicitation, for the husband does not sue for a wrong done to her, but to himself. The gist of the action is the shame which has been inflicted upon him, and the hazard to which he is subject of maintaining spurious issue. It is therefore quite distinct from the wrong of enticing the wife away from the husband, although, like seduction (q.v.), it is looked upon as a personal injury to the husband. He may condone the wife's offense, and thus lose his right to secure a divorce, without affecting his right to damages against the paramour. It has been judicially declared that the law will not hold a party remediless for an injury of this kind because, through the exercise of Christian virtue, the influence of family interest, or for any other reason, he forgives an erring wife and trusts in her reformation and promise of future good conduct. He may forgive the wife without forgiving the author of the wrong done him. See ADULTERY, and consult the authorities there referred to.

CRIMINAL LAW. That branch of public law which defines and prescribes the penalties for crime or public wrongs, i.e., wrongs or injuries by individuals against the state or sovereign as distinguished from injuries by individuals against others, which are dealt with by the private law of wrongs, or torts. All civilized systems of law now agree in drawing this distinction between public and private wrongs. There is no doubt, however, that the law of crime had its origin in the law of tort, and that in primitive society the consequence of the various acts now recognized as crimes

was to give rise exclusively to an obligation to the injured person or his representative which might be satisfied by the payment of money. Under the early Anglo-Saxon law, which corresponded substantially in this particular with other ancient systems of law, "a sum was placed on the life of every free man according to his rank, and a corresponding sum on every wound that could be inflicted on his person, for nearly every injury which could be done to his civil rights, honor, or peace; the sum being aggravated according to adventitious circumstances." (Kemble, *Anglo-Saxons*, vol. 1, p. 177.) (See BLOOD MONEY; WERGILD; ETC.) The earliest recognition in ancient law of distinct wrongs against the state appears in the isolated acts, legislative in character, by which the state avenged itself for wrongs done in the same manner that private individuals were permitted under sanction of law to avenge or requite themselves for private wrong.

From these occasional legislative acts by which the state avenged itself upon the criminal for the wrong which his criminal act inflicted upon its peace and security, it was a natural transition to a system by which this particular function was delegated to a permanent commission, still legislative rather than judicial in character, whose duty it was to investigate and punish wrongful acts, usually of violence, which, though inflicted on an individual, threatened the peace and public order of the community, and finally to the more modern system under which a permanent tribunal wholly judicial in character defines and applies the law relating to crime. The history of the *Curia Regis*, or King's Court, which was at once the legislative, administrative, and judicial body under the Norman kings, shows these successive stages of development in our own criminal jurisprudence. The Court of King's Bench, which was the criminal branch of the King's Court, was organized in the reign of Edward 1 (1274-90). It follows, from the character of all public wrongs, that the first essential of a crime is some act which, because of its effect upon the community, is deemed an offense to the state. This may happen either: (a) because the act is directly an injury to the state; or (b) because the act is a direct interference with the performance of some duty, as of protecting the life, property, safety, and morals of citizens, which, upon grounds of public policy, the state has assumed.

Crimes may be conveniently classified as follows: (a) offenses against government; (b) offenses against public peace and health; (c) offenses against religion and morality; (d) offenses against personal liberty and security; (e) offenses against the dwelling house; (f) offenses against property; (g) maritime offenses. At common law also crimes were classified as felonies and misdemeanors, and the distinction has been preserved to some extent by the modern law and the various criminal codes. See CRIME; FELONY; MISDEMEANOR.

Criminal Procedure. The first step towards placing one charged with crime upon his trial is his arrest. (See ARREST.) After the arrest the prisoner must be brought for examination before the magistrate, who may hold him for the action of the grand jury, or, if an indictment has already been found, may hold him for trial before a petit jury. Pending trial, the prisoner is committed to jail, unless admitted to bail. See BAIL.

The method of finally accusing one with the commission of a crime is by indictment by the grand jury, which may either precede or follow the arrest. (See JURY; GRAND JURY.) The indictment is the final pleading corresponding to the declaration or complaint in a civil action, which sets out all of the essential elements of the crime and all facts necessary to give the court jurisdiction to try the prisoner for the offense charged. (See INDICTMENT.) Upon the trial the indictment must be read to the accused, and he is then given opportunity to plead to it. The prisoner may demur to the indictment on the ground that it is in law insufficient in force or substance. (See DEMURRER.) He may plead in abatement, setting up any facts showing want of jurisdiction in the court or other reason why he should not be placed upon his trial, or he may plead a former conviction or acquittal. See AUTREFOIS ACQUIT; JEOPARDY.

If the prisoner is unsuccessful upon his demurrer or the pleas already referred to, he must plead to the merits by a plea of either guilty or not guilty. A plea of guilty in effect admits the charge and is equivalent to a conviction after trial. A plea of not guilty puts in issue the indictment and places the prisoner upon his trial before a jury. (See JURY; PLEADING; TRIAL.) Upon verdict of the jury of not guilty the prisoner must be discharged. If the jury fails to agree upon a verdict, the prisoner may again be placed upon trial before a new jury, or if the verdict be guilty, he must be sentenced by the court to undergo whatever penalty the law provides for the crime. (See PUNISHMENT.) After conviction, but before sentence, the prisoner or his counsel may move to arrest the judgment because of some material error in the proceedings appearing on the record, or he may move to set aside the verdict because not supported by the evidence, or because of newly discovered evidence. Upon denial of this motion the prisoner must be sentenced, the sentence being the judgment of the court fixing and directing the punishment of the prisoner according to law.

The English common law of crime has been adopted in most of the States of the United States, with some statutory modification and addition. In a few States the criminal law has been codified, and in these jurisdictions it is entirely statutory. The law of procedure, while substantially changed by statute in all of the States in matter of form, varies in no important particular from the substance of the procedure at common law which has here been outlined.

As the several States upon the formation of the Federal Union retained their jurisdiction over crime, the Federal government has no common-law jurisdiction over crime, nor can it have any statutory jurisdiction over crime except over such crimes as in some way interfere with the power delegated to it in the Constitution by the several States, including such as arise in territory subject to its exclusive jurisdiction.

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the *Criminal Law of England* (London, 1883); id., *General View of the Criminal Law of England* (New York, 1890); Phillips, *Comparative Criminal Jurisprudence* (Calcutta, 1889); Clarke and Marshall, *Treatise on the Law of Crimes* (St. Paul, 1905). Consult also authorities under JURISPRUDENCE; CRIMINOLOGY; PENOLOGY; CONSTITUTIONAL LAW.

For a discussion of the elements of a crime, of the place where a crime is punishable, and other matters affecting the liability, trial, defense, and punishment of crime, see such topics as ATTEMPT; JUSTIFICATION; JURISDICTION; JUDGMENT; PRINCIPAL; ETC.

For a discussion of particular offenses against a government, see TREASON; BRIBERY; EXTORTION; CHAMPERTY; MAINTENANCE. BARRATRY; EMBRACERY; CONTEMPT; PERJURY; RESCUE; PRISON BREACH; AFFRAY.

For offenses against public peace and health, see AFFRAY; RIOT; FORCIBLE ENTRY; LIBEL; SLANDER; ENGBOSSING; FORESTALLING.

For crimes against religion and morality, see BLASPHEMY; ADULTERY; BIGAMY; SEDUCTION; ABDUCTION; ABORTION; FORNICATION.

For offenses against the person, see ASSAULT; BATTERY; MAYHEM; HOMICIDE; MANSLAUGHTER; MURDER. FALSE IMPRISONMENT; RAPE; ROBBERY.

For offenses against the dwelling house, see ARSON, BURGLARY.

For offenses against property, see LARCENY; EMBEZZLEMENT; FALSE PRETENSES. MALICIOUS MISCHIEF; RECEIVING STOLEN GOODS; FORGERY. COUNTERFEITING.

For maritime offenses, see PIRACY, BARRATRY.

CRIMINAL NEGLIGENCE. See NEGLIGENCE.

CRIM/INOLOGY (from Lat. *crimen*, crime + Gk. *kryia*, *logia*, account, from *λέγειν*, *legein*, to say). The science which treats of the nature and causes of crime. As a separate study it is of comparatively recent growth, and the credit for its foundation as an independent branch of knowledge is usually given to Cesare Lombroso, an Italian professor in the University of Turin, who in 1876 published a remarkable book entitled *L'Uomo delinquente* ("Criminal Man"). Since its appearance quite a number of eminent scientists—physicians, jurists, economists, and sociologists—have taken up the study of crime and criminals. There is, however, such a difference of opinion concerning the fundamental causes or factors of crime that criminologists are divided into several groups. These groups may be classified under two large divisions, their difference turning upon the emphasis laid upon the individual causes of crime, on the one hand, or upon its social causes, on the other hand. The criminal, one party asserts, is born, not made; he is a criminal by nature, and the circumstances of education or environment have little or nothing to do with his law-breaking career. The opposing party maintains that social organization, education, environment—causes lying outside the individual—really determine whether or not he will become a criminal. As a rule, those who adhere to the former point of view conceive the study of crime as a part of anthropology, a part of the study of man; while those who believe that social conditions furnish the causes and explanation of crime consider this study a part of sociology. Thus the two terms usually applied to criminology, "criminal anthropology" and "criminal sociology," each indicate a prejudice in favor of one

or the other of the tendencies characterized above.

The subject of criminology is a complicated and difficult one. It is only within the present generation that the possibility has arisen of conducting the study of criminal problems on anything approaching an exact and scientific basis. Before the introduction of a system of criminal statistics it was impossible to ascertain whether crime was increasing or decreasing, what transformation it was passing through in consequence of the social, political, and economic changes constantly taking place in all highly organized societies, and what was the effect of punishment on the criminal population. Statistics, moreover, even when carefully collected, often mislead. Suppose, e.g., that the number of convictions for crimes and misdemeanors has increased in Belgium from 22,359 in 1870 to 40,372 in 1890; this does not necessarily mean that crime has increased, for the total population may have increased more rapidly than the number of offenses, and in such an event criminality has really diminished. The larger number of convictions in 1890 may, perhaps, be due to an increase in the number of punishable offenses because of the enactment of severer laws; certain acts legally permissible in 1870 may have become misdemeanors in 1890. Another possible explanation of a merely apparent increase in criminality is offered by the fact that perhaps the police have become more efficient or more vigilant, and that therefore many offenders who escaped in 1870 are now brought before the courts and condemned. These three possible explanations are sufficient to show how careful we must be in the employment of criminal statistics. Particularly when we go beyond the statistics of a single nation and attempt to compare two or more nations with a view to their relative criminality, we must be even more cautious. In no two countries is the criminal law the same, and an act which is perfectly harmless when committed in one country is considered in another as a contravention of the law. Each country has also a nomenclature of crime and methods of criminal procedure peculiar to itself. In each country the police are organized on a different principle and act on a different code of rules. Great differences of opinion exist also among different nations as to the gravity of certain offenses. Whenever it shall be possible to collect criminal statistics in the several nations according to a uniform system, then criminology will have the necessary inductive basis for fruitful comparisons between nations.

The narrow legal definition of crime as a violation of the law is scarcely of any value for philosophical purposes; and a scientific definition which shall include all acts which at any time have been called crimes, but include none other—which shall, moreover, specify their common characteristics—remains yet to be found. It seems highly probable that the study of primitive religious ideas and primitive social organization will throw considerable light upon the problem of discovering the essential nature of crime. It should be noted, meanwhile, that originally the question whether a certain act was criminal or not, and, if criminal, how the perpetrator should be punished, was answered by the offended party—individual, family, or clan—and not by the political organization of the whole people (the state). That the state should determine these matters and reserve to

itself the right to judge and to punish is a result of quite recent evolution. Even to-day the state is far from being the only coercive institution; duels, and, in a measure, lynching, are survivals of the previous status.

The question whether crime is increasing has been very widely discussed, pro and con. The statistics for England seem to indicate a slight decrease in the ratio of criminals to the general population, and the same thing holds true of the German Empire. In neither country do the more serious forms of crime show a tendency to decrease, and in Germany the number convicted for second and additional offenses—the recidivists, or true criminal class—is steadily on the increase. From 1882 to 1901 first offenders diminished from 736 per 100,000 persons of punishable age to 664. Those convicted for second or other offenses increased from 93 per 100,000 to 135. In the United States there are no statistics that give conclusive evidence as to the relative changes in volume of criminality, but it is the opinion of most statisticians that crime is increasing more rapidly than the general population.

Causes of Crime. The factors responsible for crime may conveniently be divided into three great categories—cosmic, social, and individual. The cosmic factors of crime are climate and the variations of temperature; the social factors are the political, economic, and moral conditions in the midst of which man lives as a member of society; the individual factors are those attributes inherent in the individual, such as descent, sex, age, bodily and mental characteristics. It is often extremely difficult to disentangle these factors, many of them, indeed, are indirectly at work where they appear to be absent. Heredity, e.g., seems to belong clearly to the individual factors, but if we trace an inherited characteristic back through a long line of ancestors, it may finally be found to have its origin in the circumstances of environment or education.

Cosmic Factors. How profoundly the physical structure, and likewise the mental life of man, is affected by his natural surroundings, by climate, seasons, soil, the configuration of the earth's surface and the nature of its products, is illustrated by the low type of life exhibited by the primitive inhabitants of inhospitable, barren countries. Concerning the influence of climate on crime, statisticians have concluded that crimes against the person, as assault and homicide, are relatively more numerous in warm climates, while crimes against property are more frequent in colder regions. The statistics of homicide in Europe show that the warmer countries, Italy and Spain, head the list in the proportion of murders to the population, while England, Scotland, and Holland stand at the bottom of the list. Prof. Enrico Ferri, after a thorough examination of French judicial statistics for a series of years, concludes that a maximum of crimes against the person is reached in the hot months, while crimes against property come to a climax in the winter. Aschaffenburg, by a study of the criminal statistics for the German Empire for the period 1883-92, established similar conclusions. Crimes against the person reach their maximum in July and August, being more than twice as numerous in those months as in December and January. Crimes against property are more uniformly distributed: they are, however, nearly 33 per

cent more frequent in December, when at their maximum, than in May and September. Crimes against the person are unduly high in the south and west of the United States; but here we have to consider not merely climate, but also race conflicts, pioneer conditions, and uncertain legal control.

Social Factors. Concerning the social factors of crime, it must be observed that the action of society upon the individual is so complex that it will here be impossible to discuss, even briefly, all these factors.

Considering, first, the conjugal condition of criminals, it appears that there is a higher ratio of criminality among the unmarried and divorced than among the married. A partial explanation of this fact may lie in the circumstance that married men and women, being subject to the restraining influences of home life, are much less apt to yield to those anti-social tendencies which manifest themselves in crime.

Considering, secondly, occupation, prison statistics show that the higher the character of a man's daily pursuits the greater the unlikelihood of his falling into crime. According to the census *Report on Prisoners and Juvenile Delinquents in 1904*, of male prisoners committed in the year 1904, 50.1 per cent were laborers and servants, 23.7 per cent were from manufacturing and mechanical industry; 17.2 per cent from agriculture. French official statistics summarizing the results of over 50 years indicate the following number of indictments for every 100,000 members of each class: agriculture, 8; liberal professions and proprietors, 9; industry, 14; commerce, 18; domestic service, 29; vagabonds and without trade or regular occupation, 405.

Thirdly, and closely related to occupation, is the influence of rural or city life on crime. In Germany, in cities of 20,000 and over, the delinquents average 134.2 per 100,000 adults; in the smaller towns and the country the average is 96.0. In France the cities, having less than one-third of the population, furnish about one-half the criminals. Nearly the same proportions hold for Italy; and the disproportionate share of the cities in criminality has been observed in the United States, although trustworthy statistics are lacking. The city is the refuge and hiding place of questionable characters; it intensifies the struggle for existence, and by the sharp contrast it offers between rich and poor, between luxury and penury, excites envy and class hatred.

A fourth point of great importance is the influence of poverty. If poverty in itself were a decisive factor, we should expect poor countries to produce the most criminals; but poor countries like Ireland, Spain, and Hungary show a smaller ratio of theft in the population than rich England. It is rather where great poverty exists side by side with great wealth that temptation is greatest and crime most frequent, especially crimes against property. Swift and unexpected industrial and commercial changes and hard times put character to unusual strains and increase the number of lawbreakers. Von Mayr, on the basis of statistics for a part of Bavaria for the period 1835-61, concluded that every half groschen added to the price of grain called forth one additional theft per 100,000 inhabitants. Aschaffenburg has compared the number of thefts per 100,000 of population in the

German Empire, 1880-1909, with fluctuations in the price of bread, and has established a remarkably close correlation. Inventions and progress in industrial processes often make it more difficult for men to support existence in their accustomed ways. There can be no doubt, moreover, that the keen struggle for existence imposed upon the poor classes disorganizes the family and destroys many of the beneficent influences of home life. It may reasonably be maintained, on the other hand, that excessive wealth, with the idleness that it frequently begets in the possessor, is quite as apt as destitution to lead to viciousness and crime. A wealthy criminal has, of course, more numerous and efficient means for escaping detection and punishment than a poor offender.

Among the other factors of crime which may properly be classed as "social" are: the influence of social theories which tend to engender contempt for human life and the institution of private property; the absence of a widespread, deep-seated religious spirit which restrains men from yielding to evil impulses; the corruption of partisan politics which permits the worst elements of the population to become the official guardians of the public peace and prosperity; lynching and public exhibitions of cruelty which debase human character; detailed accounts of crimes in the daily press; the influence of association and suggestion by which gangs of shiftless men or boys form centres of criminal life under the leadership of unscrupulous chiefs; social disturbances like war, crises, revolutions, and exposures, which disturb the even tenor of social progress and relax the social bond.

Individual Factors. Finally, the individual factors of crime should be briefly considered. They have been carefully studied by a score of scientists, beginning with Lombroso, the founder of criminology, who was disposed at first to overlook all but the individual factors. *Sex.*—In all civilized nations women are less addicted to crime than men, and girls less than boys. Among most European peoples between five and six males are tried for offenses against the law to every one female. Women are less inclined to acts of violence than men on account of their physical weakness, but when women do become criminals their crimes are frequently characterized by a cruelty and relentlessness not found in male offenders. The crimes of women are mostly infanticide, abortion, poisoning, domestic theft. They are addicted equally with men to the perpetration of parricide, and more frequently convicted than men of parricide. Women are also more hardened criminals than men, probably because a woman may regain her rank in society only with the greatest difficulty. *Age.*—In proportion to the population crime is, as we should expect, at its lowest level from infancy till the age of 16. From that age it goes on steadily increasing in volume till it reaches a maximum between 30 and 40. Females do not enter upon a criminal career so early as males, and the criminal age is earlier in coming to a close for women than in the case of men. *Education.*—The question whether education reduces or increases criminality is far from being conclusively answered. Those states which have the best systems of education have also the most criminals in their jails and prisons. But, as a rule, the proportion of our prison population unable to read or write is considerably higher than in the free population. M. Henri Joly, an emi-

nent French criminologist, maintains that most frequently passions and vices which have nothing to do with instruction are the veritable motives of crime. It seems reasonably certain, however, that the lack of instruction in manual and trade processes and the absence of personal, moral, and spiritual influences account for much of the tendency to crime. *Drunkenness.*—All authorities agree that intemperance is a serious cause of crime. It weakens the will, leads to evil associations, dulls the conscience. Statistical information concerning this point is usually nonofficial and of little scientific value. German statistics for 1902 show that, of 97,376 persons convicted of aggravated assault, 34,652 had committed their offenses on Sundays or holidays, the days of heaviest drinking. *Heredity.*—Individual degeneracy, which Dr. Ferri has shown to be closely connected with crime, is frequently passed on from generation to generation. The diagrammatic history of eight families given by Dr. Strahan in his book on *Marriage and Disease* illustrates the degenerate tendencies transmitted from father to children throughout several generations. Similarly, Dugdale, in his book on the Jukes, has traced the posterity of a criminal and found that the great majority of his descendants possessed vicious or criminal instincts. Lombroso advanced the hypothesis that the criminal is essentially atavistic—a type harking back to remote progenitors and characterized by the psychology of the savage rather than that of the civilized man. Later study led him to admit pathologic qualities not essentially atavistic, and, above all, epilepsy, as an additional cause of criminality. Evidence of atavism is found by Lombroso and his school in anatomical and psychological peculiarities that appear with greater frequency among criminals than in the noncriminal population. The characteristics enumerated by Lombroso as indicative in certain combinations of the criminal type include height and weight above the average; asymmetry of the skull, brain, and face; brain lighter in weight than the normal; light hair; scant beard; retreating forehead; projecting eyebrows and ears; long arms, insensibility to physical pain, pointed skull; heavy lower jaw; defective lungs; tendency to diseases of the heart and of the sexual organs; etc. Criminal anthropologists, however, are far from agreeing upon these anomalies, and often reach conclusions divergent from and sometimes contradictory to those of Lombroso. The weight of opinion among criminologists of the present day is that while criminality is somewhat more common among atavistic types than in the general population, only a small fraction of present-day criminality is attributable to such types. The hereditary criminal exists, but criminality produced by social and economic causes is far more common and of far greater significance. For bibliography, see MacDonald, *Hearing on the Bill to Establish a Laboratory for the Study of the Criminal, Pauper, and Defective Classes* (Washington, 1902). Wigmore, *A Preliminary Bibliography of Modern Criminal Law and Criminology* (Chicago, 1909). Consult also Morrison, *Crime and its Causes* (London, 1891); Rylands, *Crime: Its Causes and Remedy* (ib., 1899); MacDonald, *Criminology* (New York, 1893); Joly, *Le crime, étude sociale* (Paris, 1894); Marsh, *Crime and the Criminal* (London, 1899); Dräkmis, *The Criminal: His Personnel and Environment* (New York, 1900); Forel and Ma-

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CRIMMITSCHAU, krim'mit-shou. A town of the Kingdom of Saxony, on the Pleisse, about 39 miles south of Leipzig (Map: Germany, E 3). It has extensive cotton and woolen mills and machine works, and manufactures yarn, wool, dyestuffs, chronometers, and metal ware. Pop., 1900, 22,840, 1905, 23,420; 1910, 28,818.

CRIMP (from Dutch *krimpen*, OHG. *chrimp-fan*, *krimfan*, to bend together, from *chrampf*, Ger. *Krampe*, Eng. *cramp*). The name given to an agent for supplying ships with seamen. They are usually in league with the most disreputable class of lodging-house and saloon keepers and with prostitutes in the endeavor to fleece the sailors as rapidly as possible. The latter can then be forced aboard ship. There are numerous laws for the protection of seamen against the extortion of crimps and their dealings with masters of vessels who need crews, but these laws are unable to reach a very large proportion of cases; and some of the laws, while not greatly injuring the crimp, seriously affect the interests of a sailor who is not in need of legal protection and those of the honest lodging-house keeper.

CRIMSON. See RED.

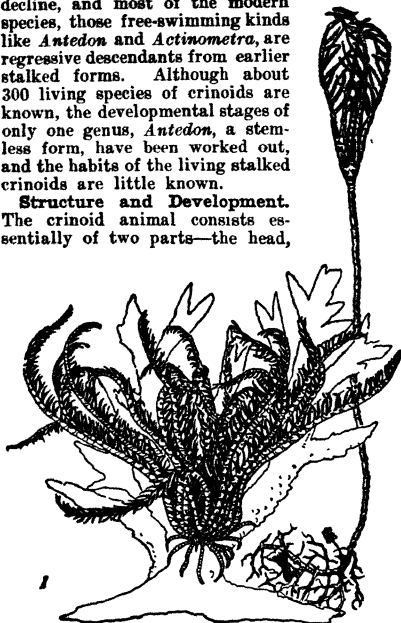
CRINED, kind (from archaic Eng. *crine*, from Fr. *crin*, Lat. *crinis*, hair). A term in heraldry. When the hair of a man or an animal differs in tincture from the rest of the charge, the object is said to be *crined* of such a metal or color.

CRINGLES (Ger. *Kringel*, Icel. *kringla*, circlet, dim. of *kringr*, pulley, *kring*, round). Short pieces of rope, with each end spliced into the boltrope of a sail, commonly confining an iron or brass ring or thimble. Smaller ropes are passed through them to aid in managing the sails. See KNOTTING and SPLICING.

CRINOIDEA (Neo-Lat. nom. pl., from Gk. *krinoidēs*, *krinoidēs*, like a lily, from *krinos*, *krinon*, lily + *ēidos*, *eidos*, form). A class of pelmatozoan echinoderms related to the Cystoidea and characterized by the regular pentamerous arrangement of the polygonal plates of the body wall, that form a usually stalked calyx, and by the presence of five generally well-developed flexible arms. The graceful flowerlike appearance of the stalked crinoids has given them the names of "sea lilies" for the living species, and "stone lilies" for the fossil varieties. The group is of great interest both to the zoologist and paleontologist, but the complex modifications of the plates of the calyx, and the usually imperfect conditions of preservation,

make their study a matter of considerable difficulty. At the present time the group is on the decline, and most of the modern species, those free-swimming kinds like *Antedon* and *Actinometra*, are regressive descendants from earlier stalked forms. Although about 300 living species of crinoids are known, the developmental stages of only one genus, *Antedon*, a stemless form, have been worked out, and the habits of the living stalked crinoids are little known.

Structure and Development. The crinoid animal consists essentially of two parts—the head,



EXISTING CRINOIDS

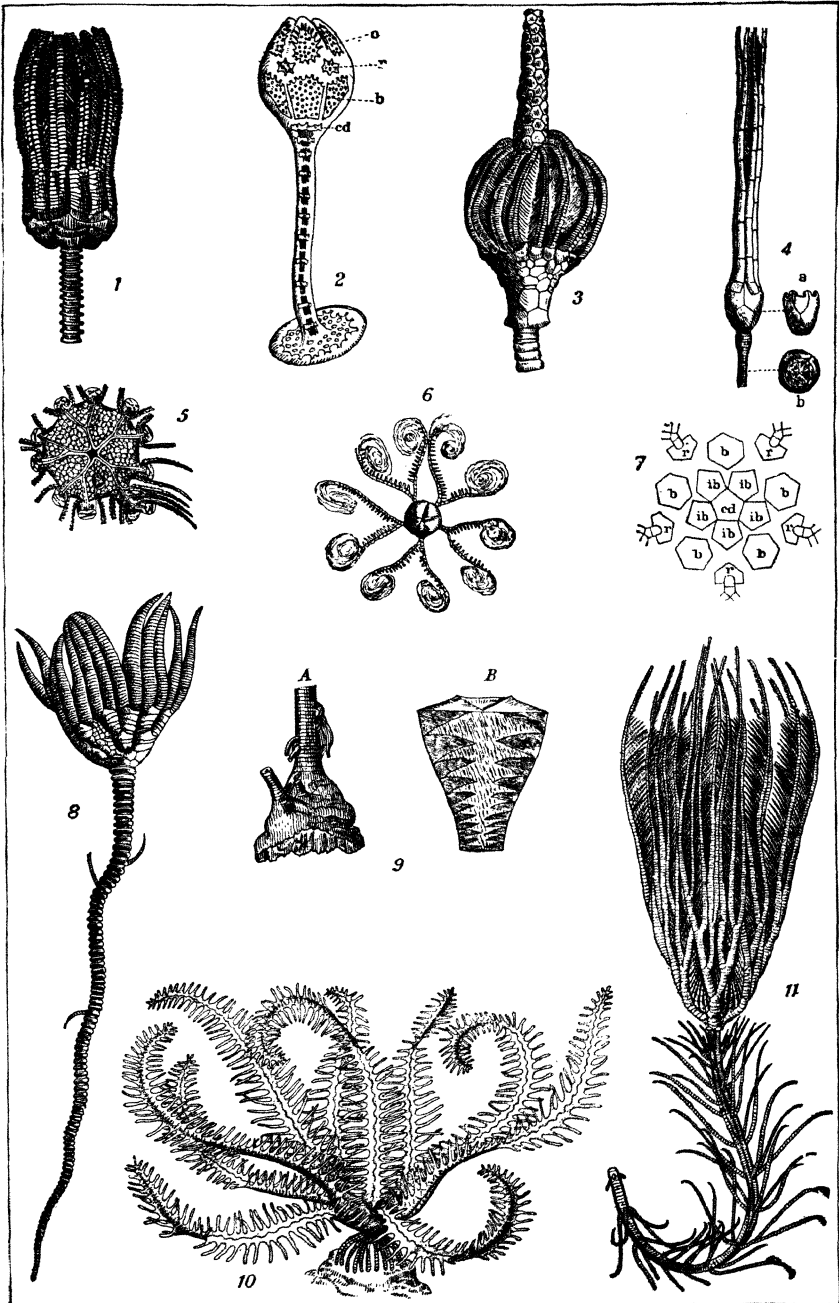
Representative species from the Atlantic. 1. *Actinometra pulchella*, 2. *Rhazocrinus lofotensis*. (After A. Agassiz.)

or calyx, and the stem, or column. The calyx bears 5 or 10 generally forked pinnulated arms attached to its sides, has upon its upper ventral surface a central mouth and an eccentric or lateral anal opening, and is itself supported by the column attached to its lower or dorsal surface. The calyx is a spherical or cup-shaped box made up of polygonal stony plates that are arranged in more or less regular horizontal series, and in vertical series according to the plan of pentamerous bilateral symmetry so prominent in the higher Pelmatozoa. The calyx contains the body cavity, in which are the vital organs, consisting of the simply coiled alimentary canal and the central portions of the nervous, generative, and water-vascular systems.

EXPLANATION OF PLATE.

1. An encrinurite (*Encrinurus*), fossil in the Trias.
2. Larva of a feather star (see Figs. 10 and 7).
3. *Batocrinus pyramidalis*, fossil in the Subcarboniferous of Iowa.
4. *Pseudo-crinus flagellifer*, fossil in the Silurian of Gotland, a posterior view of a perfect calyx; b, calyx seen from one side.
5. Type of calyx with a coraceous skin in which calcareous plates are imbedded.
6. A free-swimming crinoid (*Saccocrinus pedunculatus*), fossil in the Upper Jurassic lithographic slates of Bavaria.
7. Diagram of arrangement of principal pieces in the calyx of a crinoid: b, basals; d, infrabasals, r, radials; cd, centrodorsal (compare Fig. 2, where the letters are the same, plus a, (oral)).
8. *Wodocrinus macrocladus* from the Carboniferous of Yorkshire, England.
9. *Apocrinus*. B, longitudinal section through the uppermost stem joints of *Apocrinus parkinsoni* (Öölitic), showing empty spaces between them; A, restoration of the base of another species (*Apocrinus rossignoli*, Upper Jur.).
10. A feather star (*Antedon roseae*), now living on European coasts.
- Fig. 2 is the larva of this, showing developing plates (see Fig. 7) of the calyx.
11. An existing deep-sea "stone lily" (*Metacrinus interruptus*).

CRINOIDS



Prolongations of these latter systems extend into the arms. These are outgrowths of certain vertical rows of the calyx plates, termed the "radials," and are capable of free movement. In many of the earlier, more primitive crinoids, like *Pisocrinus*, the arms are simple; in the more specialized forms, *Pentacrinus*, they are quite complex and fork frequently. In all crinoids the arms bear pinnules and are provided with cilia. The feathery branches of the arms screen food from the water, while the ciliated grooves transport the food to the mouth through the food grooves, which are continued over the ventral surface from the bases of the arms to the mouth opening.

The ventral surface of the calyx in modern genera is usually covered by a tough skin, but in the Paleozoic forms it was often covered by a superficial "vault" or "tegmen" of calcareous plates. The mouth is then underneath the tegmen or ventral covering and communicates with the food grooves of the arms through closed stony tubes. In these genera the plates of the vault are often so arranged as to form an elevated "proboscis" (*Batocrinus*), at the summit of which is the anal opening, which is thus placed above the ends of the arms. The crinoid stem is attached to the base of the calyx, and consists of calcareous plates loosely jointed together to allow of a considerable degree of flexibility. Increase in the length of the stem is accomplished by the growth of new columnar plates between the base of the calyx and the top of the column. In form the columnar plates are discoid and of circular or pentagonal outline, and all are pierced by a central cavity through which passes the neurovascular canal of the column. Most crinoid stems are furnished at their lower ends with rootlike branches that serve to anchor the animal in muddy or sandy bottoms; others, *Apocrinus*, have a disklike expansion that is cemented to rocky surfaces, and one genus (*Scyphocrinus*) was fixed in the mud by large spherical bulbs, described as *Camarocrinus*, and until recently considered as floats of crinoids. Several genera, especially in later geologic and modern times, have columns supplied with lateral branches, called "cirri," which are similar in construction to the stem itself. The pentacrinids have the longest stems known, some of the fossil forms from the Upper Lias rocks of Württemberg having been found with stems ranging from 15 feet to the extraordinary length of 50 feet. Many of the crinoids with stems seem to have been fixed in their early stages only and detached in maturity. Some forms of crinoids, such as *Agasszocrinus* of the Carboniferous, *Uintacrinus* of the Cretaceous, and *Antedon* of recent seas, have no stem and are free-swimming animals, using their arms for locomotive purposes. *Uintacrinus* is the most remarkable of these, for, with a body only 2 or 3 inches in diameter, it has delicate feathery tentacles nearly 6 feet long, that served both as swimming organs and as food screens. Living *Antedon*, without a stem, has a whorl of cirri at the base of the calyx, and by means of these it anchors itself to the bottom. In other stemmed forms, as *Woodocrinus* from the Carboniferous, the base of the stem appears never to have been attached, as it ends in a simple point.

The development of Crinoidea is known for only one genus, *Antedon*, the feather star, and this cannot be considered as typical of the class as a whole, as it presents a case of regressive

development. *Antedon* appears from the egg as an elliptical free-swimming larva that is crossed by four transverse ridges, has a posterior bundle of bristles and a lateral mouth, and resembles in many respects an annelid larva. This larva increases in size, and inside of it develops an animal with the form of a cystoid, with a head of loosely jointed perforated plates, a column, and a basal columnar plate. For a time this stalked larva is attached, and it resembles a primitive crinoid, but soon the stem is absorbed, and the animal assumes the form of the adult free-swimming *Antedon*. Almost nothing is known of the ontogeny of the host of fossil crinoids.

Habits and Distribution. The modern Comatulidae, like *Antedon*, *Actinometra*, etc., have a very wide distribution, and are usually found in waters less than 150 fathoms in depth, although one species of the *Antedon* has been dredged from the great depth of 2900 fathoms. The habits of *Antedon* are best known. It is a gregarious animal, and Verrill has obtained 10,000 individuals in a single trawl in the north Atlantic. It lives mostly in the upper layers of the water, but when exposed to the direct rays of the sun, it curls up its arms and sinks. When clinging by its cirri to a coral or rocky point and disturbed, it releases itself immediately and swims away by graceful movements of the arms, or crawls on its arms like a spider over the bottom. Sudden changes of temperature stun it, it sinks to the bottom and soon dies. When these animals find themselves in uncomfortable surroundings, as when taken in the dredge and placed in aquaria, they drop off their arms, which break at specially fused joints, called "syzgyies," but the arms are restored through regeneration if the crinoid survives. The stalked crinoids are also gregarious animals, but they are more restricted in their distribution and inhabit deeper waters. The majority of fossil stalked crinoids are found in rocks that were undoubtedly comparatively shallow-water deposits, and because the calcareous plates of the calyx, and to a lesser degree those of the stem, fall readily apart after the death of the animal, perfect specimens are quite rare finds. The food of crinoids has been ascertained to consist of minute crustaceans, diatoms, spores of algae, foraminifera, and radiolarians.

Fossil Crinoids. About 175 genera and 2000 species of fossil crinoids are known. They appear first as very simple forms in Ordovician rocks, and they increase rapidly, becoming important elements of the faunas in the Silurian, Devonian, and Carboniferous periods. In some regions they were exceedingly abundant, for their fossil remains form great beds of limestone known as "crinoidal" or "encrinal limestone," which are found in formations of various ages. In the Silurian system alone, about 400 species, distributed among 70 genera, have been obtained from mostly three localities: the island of Gotland, the Wenlock of England, and the Niagara group of North America. Some of the more characteristic genera are *Pisocrinus*, *Crotalocrinus*, *Calceocrinus*, *Callocrinus*, and *Eucalyptocrinus*. In the Devonian system some localities have yielded good material. The Lower Carboniferous rocks of the upper Mississippi valley are the most renowned sources of fossil crinoids. The shaly limestone beds at Burlington, Iowa, and Crawfordsville, Ind., have furnished hosts of finely preserved specimens, which are to be seen in geological collections all over the world.

The Mesozoic rocks of Europe, especially the Liassic and Jurassic, have furnished some fine examples of *Encrinurus*, *Apocrinurus*, and the pentacrinids, but the rocks of this era in America hold only rare occurrences of members of this class. The only find of note—and that was one of great importance—was that of *Uintacrinus* in the Cretaceous chalk of western Kansas. The Tertiary rocks seem to be poor in fossil remains of this group.

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CRINOLINE (Fr., from Lat. *crinis*, hair + *linum*, flax). A name originally given by French dressmakers to a fabric made of horsehair, capable of great stiffness, and employed to distend women's attire; it is also applied in a general way to those structures of steel wire or hoops by means of which women some years ago were able to wear skirts of extraordinary size at the bottom. The first device for producing an expansion of the dress skirt is the *fardingale*, introduced by Queen Elizabeth. Walpole, in his fancy descriptions of her, speaks of her "enormous ruff and vaster fardingale." The upper part of the body was incased in a cuirass of whalebone, which was united at the waist with the equally stiff fardingale of the same material, descending to the feet, without a single fold, in the form of a great bell. In the end of the reign of James I this fashion gradually declined, and, as a result of the Puritan feeling in the time of

Charles I and Cromwell, it quite disappeared. It is next heard of in 1711 as "that startling novelty the hoop petticoat," which differed from the fardingale in being gathered in at the waist. About the year 1796 hoops were discarded in private life, but were still the mode at court, where they flourished until the time of George IV, when they were abolished by royal command.

The next development of this fashion, about the middle of the nineteenth century, began with crinoline in its original and proper sense, first in the form of the "bustle" in the upper part of the skirt, then the whole petticoat. The hoops were sometimes made with a circumference of four and even five yards. At last, after indignation and ridicule had for years assailed the monstrosity in vain, and when people had ceased speaking about it, the inflation began, about 1866, without any apparent cause, to collapse; and, rushing to the opposite extreme, ladies might be seen walking about as slim as if merely wrapped in a morning gown. At the close of the nineteenth century the name "crinoline" was applied to a cotton gauze stiffened with a dressing of glue and sold by the yard for use by milliners and dressmakers.

CRINUM (Neo-Lat., from Gk. *κρίνον*, *krinon*, lily). A genus of bulbous-rooted plants of the family Amaryllidaceae, having long tubular flowers. It contains about 80 species, natives of different tropical and subtropical countries, generally with umbels of large and beautiful flowers, some of them among the most admired ornaments of our hothouses. *Crinum amabile*, an Indian species, is much esteemed. The plants are mostly cultivated in greenhouses, although *Crinum longifolium* is semihardy and, with slight protection, will endure the winters as far north as Washington. Numerous hybrids have been produced, some of them of exceeding beauty and possessing exquisite perfume. *Crinum americanum* is a native of Florida.

CRIPPLE CREEK. A town and the county seat of Teller Co., Colo., about 20 miles (direct) west-southwest of Colorado Springs; on the Midland Terminal and the Florence and Cripple Creek railroads (Map Colorado, D 3). It was founded in 1890 as a mining town, developed rapidly after 1893, and was nearly destroyed by fire in 1896. The district in which it is situated is a complete network of gold-bearing veins, and mining gave rise to the subsequent founding of Victor, Altman, Goldfield, and other near-by towns. The mining district covers an area of about 6 miles, of which only about one-tenth has been developed. The total gold output of this region up to 1914 was more than \$300,000,000. The mines have attracted the attention of metallurgists, owing to the peculiar nature of the ores, which has necessitated new methods of treatment. The completion of the Roosevelt Drainage Tunnel in November, 1910, at a cost of \$750,000, solved the problem of unwatering the mines and made deep mining possible. Cripple Creek, at an elevation of 9800 feet, is known also for its scenery and healthful climate. Pop., 1900, 10,147; 1910, 6206; though the whole district contains about 20,000.

CRIPPLEGATE. An ancient London gate, probably dating from the restoration of the walls by King Alfred in 886. It is said to have taken its name from the lame beggars who congregated there, in 1010 A.D., to touch the body of Edmund the Martyr as it was passing

through. It was twice rebuilt, and was pulled down in 1760. The name was also applied to the district round it.

CRISA, or CRISSA. See DELPHI.

CRISFIELD. A city in Somerset Co., Md., about 100 miles (direct) south-southeast of Baltimore, with which it is connected by a steamship line, on the New York, Philadelphia, and Norfolk Railroad, and on Chesapeake Bay (Map: Maryland, O 9). Oyster and crab packing is the leading industry. Crisfield was incorporated as a city in 1910. It contains a marine hospital. Pop., 1910, 3468.

CRISIS (Lat., from Gk. *krisis*, *krisis*, decision, from *kriuein*, *krinein*, Lat. *cernere*, to decide). A name used by the older physicians to denote the rapid or sudden determination of an acute disease in the direction of convalescence or of death. It is opposed in signification to "lysis" (*luc*, I relax), which denotes the gradual subsidence of the symptoms and improvement in condition in most chronic and in some acute diseases. The doctrine of crises was closely bound up with that of a *materies morbi*, or material of disease, in the blood, which was presumed to be undergoing changes, during the whole course of the malady, tending to an evacuation of some kind from the system in the form of a critical discharge (*apostasis*, or *abscess*), which, when observed, was supposed to contain the matter of disease in a state of *cocoon* and to be the direct cause of the sudden relief of the patient. Thus, according to the character and seat of the critical discharge, it was common to speak of a crisis by sweating, by diarrhoea, by expectoration, by urine, by parotid swellings, etc.; and no crisis was considered regular that was not attended by some symptom of this kind. Another curious doctrine associated with that of crises was the belief in certain days as ruling the beneficent or injurious, the complete or incomplete, character of a crisis. The seventh, fourteenth, and twentieth (according to some, the twenty-first) days of the disease were regarded as eminently critical, less so, but still favorably critical, were the third, fifth, eleventh, and seventeenth, the fourth day was the *indicator* of a complete crisis on the seventh; the sixth day was the *tyrant*, notorious for unfavorable crises; the second, eighth, tenth, thirteenth, and the rest were noncritical. Physicians now use the term in diseases which run a certain course, such as typhoid fever and pneumonia, and then chiefly in relation to the temperature. A fever is said to fall by crisis when it reaches the normal in a few hours; by lysis, when it takes three or four days gradually to disappear.

CRISIS. A series of patriotic writings, 14 in number, published by Thomas Paine at Philadelphia during the Revolution. They appeared at intervals from 1775 to 1783.

CRISIS, ECONOMIC. A term employed by economic writers somewhat loosely to designate either the acute phase or the whole course of the disturbances in economic life which have characterized the last century and which have recurred with such frequency as to make them appear inevitable results of the modern industrial order. The phenomena involved are so complex that they must be described rather than defined.

The salient fact in the economic history of recent times is the "business cycle," or the alternation of prosperity and depression, of good

times and bad. A period of prosperity with expanding business, great activity in production and commerce, is followed by a period in which some enterprises, then others, find costs advancing so rapidly as to encroach upon profits. Contraction of operations follows, with decline in demand for materials and labor, and with resulting embarrassment for the industries supplying material, and declining demand for products intended for general consumption. Thus the distress extends in widening circles until it affects eventually the whole business system. The process of readjustment may be gradual, or it may be greatly accelerated by the failure of a great banking house, an event likely to drag down other banking and mercantile firms. Such an event results in widespread uncertainty and suspicion, creditors demand the payment of claims, debtors, even though solvent, find the banks unwilling to provide means of payment. Panic rules, and for a time the whole mercantile structure threatens to collapse. From such a shock business recovers but slowly, its activity is reduced to the lowest ebb, and some time elapses before the restoration of confidence takes place. This period of depression is much more prolonged than the acuter phase which precedes it. After a time business revives and begins to expand. Prices rise, and activity becomes greater. A wave of prosperity again appears which seems to carry everything before it until it, in turn, is checked suddenly, and a new crisis is at hand. Lord Overstone, in an oft-quoted passage, describes these successive phases as follows: "State of quiescence, improvement, growing confidence, prosperity, excitement, overtrading, convulsions, pressure, stagnation, distress ending again in quiescence."

This related sequence of phenomena is now generally known as a business cycle. The term "crisis" is often employed to cover the whole part of the cycle in which hard times prevail. It is, however, more properly applied to the point in the process when contraction proceeds rapidly and liquidation becomes fairly general. The long period of stagnation that usually follows is properly denominated by the term "depression." The term "panic" is often used interchangeably with "crisis," but it is more properly restricted to an acute phase, not always appearing in crises, when the consciousness of impending disaster is widespread, and leads to more or less unreasoning acts calculated to aggravate the conditions dreaded.

Crises are designated as financial, commercial, and industrial. These qualifying phrases mark the places in the economic organism where the disturbance is felt. In a purely financial crisis the stock market is the storm centre, the disturbance affecting but slightly commercial or productive enterprises. A commercial crisis is of wider area and embraces the trading classes, while an industrial crisis extends its baneful influence to producers in all lines of agriculture, manufactures, and the like. These expressions do not designate so much different classes of crises as crises of different degrees of intensity, inasmuch as an industrial disturbance will always imply disturbance in trade and the money market, while trade upheavals imply commotion in the money market, though a financial panic does not necessarily imply the others.

While crisis and depression are usually associated, this is not always the case. Panic and

crises may occur, and after a brief interval affairs may prosper as before. This is particularly true of the purely financial crises, which are not deep-rooted enough to affect wider areas. The crisis in its larger sense, however, is invariably followed by hard times. It should be observed, moreover, that crises may be local or general, and while they have many points in common, it is particularly the latter with which we have to deal.

General crises affecting the economic situation of an entire country, and extending themselves to other countries which have trade relations with the former, are peculiarly a mark of the modern organization of business. A century ago bad harvests or other calamities might cause local distress, or speculation such as was exhibited in the days of the South Sea Bubble and the Mississippi Scheme might cause a panic, but such occurrences did not show the pertinacity and wide-reaching effects which characterize the modern industrial disturbances. That such crises are inevitable consequences of modern methods of doing business and inseparable from the economic activities of our times, seems to be well established by their frequent recurrence and by their greater severity in the most advanced nations.

Crises more or less pronounced occurred in England in the years 1815, 1825-26, 1836-37, 1847, 1857, 1866, 1873, 1890, 1900, and 1907, while in the United States like disturbances were felt in 1814, 1818-19, 1837, 1857, 1873, 1884, 1889, 1903-04, and 1907. The periodicity of these occurrences is marked, and certain writers have gone so far as to establish a normal interval of 10 or 12 years between crises. The facts as far as we know them do not warrant us in fixing any absolute rule, though the history of these crises reveals many common features.

It will further be observed that the dates given for Great Britain and our own country coincide in several instances, and if space permitted us to draw upon the history of Belgium, Holland, France, and Germany, further coincidences would be obvious. Certain crises, notably that of 1873, were felt quite generally. The actual crash did not occur in the same month, or even in the same year, in all the countries involved, but it is a frequent occurrence that local circumstances may hasten or postpone an event for which the general conditions are preparing.

The concrete manifestations of a crisis can best be studied in an historical instance, and none is better adapted for this purpose than the crisis of 1873 in the United States. With the close of the Civil War an extraordinary activity in all lines of enterprise was manifested. The public lands had been thrown open to settlement, and large tracts had been granted to the Pacific railroads. This, together with the return of the army to the pursuits of peace, and an enormous increase in immigration, was the condition for an era of speculative development in the Western States. The impulse which had been given to manufactures, not only by the highly protective duties which marked the war tariffs, but also by the depreciation of the currency, which acted as a check upon foreign competition, caused a similar activity in the manufacturing States of the East. Business prospered; prices and profits were high. The census of 1870 showed

in every branch of industry a great advance over that of 1860, and the greater part of this advance was in the latter half of the decade. Nowhere was this confidence in the future shown more than in railroad building and in the iron industry. In 1867 there were 2249 miles of railway constructed; in 1869, 4615; in 1871, 7379. A like expansion of railways had marked the approach of the panic of 1857. In like manner, the outlay for constructing railways rose from \$271,310,000 in 1864-68 to \$841,260,000 in 1869-73. The consumption of pig iron, which had been 1,416,000 tons in 1868, rose to 2,910,000 tons in 1873. High prices ruled. The maximum prices in the period following 1860 were, it is true, attained in 1866, but if they fell in the years 1867 and 1868 it was only to rise again to a point nearly equal to that of 1866 in 1871 and 1872. The activity in the commercial centres is reflected in the rise of clearings in the New York Clearing House from \$28,000,000,000 in 1868 to \$35,000,000,000 in 1873. The foreign trade of the United States showed a like activity, the aggregate of exports and imports rising from \$639,000,000 in the fiscal year 1868 to \$1,165,000,000 in 1873. But even more significant of the expansion of activity in the United States was the fact of increased importations from abroad. In 1870 the imports exceeded the exports by \$43,000,000, but in 1872 this excess had become \$182,000,000 and in 1873 \$120,000,000.

The crisis of 1873 is usually dated from the failure of Jay Cooke & Co., September 18. The Stock Exchange of New York was closed on the 20th and was not reopened until the end of the month. Clearing House loan certificates were issued in large quantities. There had been certain premonitory symptoms of the approaching collapse. Railroad building reached its highest point in 1871, pig iron its highest price in September, 1872. The crisis lasted a few months only, the last Clearing House loan certificates being redeemed Jan. 14, 1874. But there followed a long period of depression, which reached its lowest point three years later. The activities which had marked the previous era were not entirely stopped, enterprises begun had to be finished to save what was already invested, the daily needs of the people must be met, but all enterprise was timid and cautious. The buoyancy of the previous years was gone, and new enterprises were not undertaken. Railroad construction fell off, and in 1875 reached a minimum of 1711 miles, while in the period 1874-78 the outlay for construction was only \$357,000,000. Prices fell until 1879, to rise thereafter until 1882. The consumption of pig iron declined until it reached 1,900,000 tons in 1876. Clearings in New York City fell off from \$35,000,000,000 in 1873 to \$23,000,000,000 in 1874, and reached their lowest point since 1863 at \$22,000,000,000 in 1876. In foreign trade the excess of imports disappeared in 1875.

Every crisis, panic, and depression is marked by analogous characteristics. Whatever data are appropriate to show expanding conditions and an inflated condition of business at any particular time and place will exhibit a similar showing. In the United States, particularly since 1840, railroad construction has been a favorite index of conditions, but before the crisis of 1837 similar activity was shown in canal construction. Before the panic of 1825, in England, there were large investments in

manufacturing establishments, while the panic of 1893 was preceded by reckless investments in foreign countries.

As the year 1873 marks the outbreak of the crisis, so the year 1876 serves to mark the lowest point in the subsequent depression. The whole story of the crisis, its antecedents and results, is succinctly told in the statistics of business failures, as reported by R. G. Dun & Co., as follows:

YEAR	Number	Liabilities
1869	2,799	\$75,054,054
1870	3,546	88,242,000
1871	2,915	85,252,000
1872	4,069	121,056,000
1873	5,183	228,499,900
1874	5,830	155,239,000
1875	7,740	201,000,000
1876	9,092	191,117,786
1880	4,735	65,752,000
1882	6,738	101,547,564
1883	9,184	172,874,172
1884	10,968	226,343,427
1885	10,637	124,220,321

A period of depression cuts down the existing stock of good, and the retrenchment of production, coupled with the constant increase of population, creates a void in the market. To fill this there is a renewed activity; as prices begin to rise, existing plants find it difficult to meet the demand. Plants are remodeled and extended. Preparation for future production on a large scale takes place. Large investments of fixed capital are made in buildings, machinery, and the like, and those branches of industry which chiefly serve the purposes of construction, such as the iron industry, make extraordinary advances. Mills and railroads are built to supply an anticipated demand. This is usually overdone, and the facilities of production increase more rapidly than the effective demand for products. Credit is unduly expanded, and it is natural that the money markets feel the first shock when the inevitable readjustment takes place.

While the phenomena of a crisis and its attendant consequences are generally recognized, the widest variety of opinion exists as to the causes of such economic disturbances. Writers are prone to lay stress upon local or temporary conditions, and to generalize from them. In truth, the phenomena of a crisis are so complex, and the conditions which may aggravate it so numerous, that it is not surprising to see the latter considered as primary causes. Thus, speculation, the currency, the tariff, bad harvests, have all been made responsible for crises. These are frequently concomitant forces impelling a crisis, but crises are so numerous that there must be some deeper underlying cause. It is in the countries that are economically farthest advanced that the successive phases of the business cycle are most clearly marked. Where production is organized on a small scale, and is chiefly dependent on a local market, similar fluctuations do not appear. Students of crises are agreed that an important circumstance in connection with them is the extent to which credit is employed in industry. In a period of prosperity prices rise, and with them, profits. On the basis of high profits credit is expanded to meet the need for new equipment, etc., and the expansion of credit gives

further impetus to the rise in prices. Within the expanding structure of industry and commerce certain stresses appear. The full employment of labor raises wages and reduces the efficiency of labor; the great demand for loans produces a rise in the rate of loan interest. In the period of good times the vigilance of managers is relaxed, and many small wastes accumulate. The existing volume of currency becomes inadequate to effect the exchange of the increasing volume of products at high prices, bank reserves decline, and bank loans are curtailed. The gains of prosperity are not uniformly distributed, some prices are kept from rising by public regulation or custom, others by circumstances peculiar to each. These industries, however, feel the effect of advancing costs and advancing interest rates. They are the first to show signs of weakness. In the end the various stresses become so great that the structure collapses.

Certain features of crises are clearly traceable to local conditions. In recent years the United States alone of the great nations has suffered from panics in time of crisis. This fact is ascribable to the want of an elastic and centrally controlled currency system. With the adoption of an improved system of banking (see BANK, BANKING) it is believed that this distressing feature of the panic will be eliminated.

Whether it will be possible to reduce the frequency and severity of crises through legislative measures is still a disputed point. It has been proposed to manipulate the funds devoted to public improvements in such a way as to create employment and demand for materials in time of crisis and depression. It has also been proposed, by Prof. Irving Fisher, so to regulate the money supply that general prices will remain practically stationary. Many believe that a more thoroughgoing publicity in matters pertaining to industry and finance will reduce the extent of ill-advised investment, and hence check the development of stresses in the industrial structure. At one time it was believed that trusts and similar forms of organization would make for stability in prices and hence prevent the recurrence of crises. Hence it was proposed to give state support to the consolidation movement, instead of attempting to check it, as now. But recent crises in the United States and Germany indicate that trusts and cartels have not perceptibly reduced their severity. Most observers of the phenomena of crises have little faith in any proposed method of checking them by law, so long as enterprise is so completely dominated by motives of private profit as at present.

Bibliography. Consult: "Industrial Depressions," *First Annual Report of the United States Commissioner of Labor* (1886); Von Bergmann, *Geschichte der nationalökonomischen Krisentheorien* (Stuttgart, 1895); Veblen, *Theory of Business Enterprise* (New York, 1904); Jones, *Economic Crises* (ib., 1900); Burton, *Financial Crises and Periods of Industrial and Commercial Depression* (ib., 1902); Lescure, *Des crises générales et périodiques de surproduction* (Paris, 1907); Hull, *Industrial Depressions* (New York, 1911); Mitchell, *Business Cycles* (Berkeley, Cal., 1913).

CRISP, CHARLES FREDERIC (1845-96). An American jurist and politician. He was born in Sheffield, England, but came to the United States when a child. He served in the Confed-

erate army from 1861 to 1864, when he was made a prisoner. He was admitted to the bar in 1866, and served as Solicitor-General of Georgia from 1872 to 1877, and as judge of the Superior Court from 1877 to 1882. From this time until his death he was a Democratic member of Congress and from 1891 until 1895 was Speaker of the House.

CRISPI, krě-spě, **FRANCESCO** (1819-1901). An Italian statesman, born at Ribera, in Sicily, Oct. 4, 1819. He studied law at Palermo and was admitted to the bar there and in 1846 at Naples. He took an active part in the Sicilian uprising of 1848 and after its disastrous issue engaged in journalism in Piedmont. In 1860 he aided Garibaldi in his expedition for the deliverance of the Two Sicilies. He became the first representative of Palermo in the Italian Parliament, began immediately to play a prominent rôle, and, after having been the leader of the radical Left, became an exponent of monarchical constitutionalism. In 1876 he was elected President of the Chamber of Deputies. To promote the interests of his country, he visited the European courts in the following year and soon after was made Minister of the Interior. Denounced by his opponents on a charge of bigamy, he was obliged to resign in 1878 and, although acquitted, did not take office again until 1887, in the cabinet of Depretis, after whose death, in the same year, he became head of the cabinet and Minister of Foreign Affairs. He was an earnest advocate of the Triple Alliance (q.v.) between Germany, Italy, and Austria, and in his endeavor to strengthen it visited Bismarck at Friedrichsruhe in 1887 and accompanied King Humbert to Berlin in 1889, conferring also with Caprivi at Milan in the following year. His policy was approved by an overwhelming majority of the electors in 1890, but his ministry was overthrown on a matter of financial policy in February, 1891. He now resumed his law practice in Rome, and in the Chamber of Deputies led the Opposition against his successor in office, the Marquis di Rudini. In 1893 he resumed the office of Premier, and held it till the defeat of the Italians in Abyssinia in 1896, when he was again succeeded by Rudini (q.v.). In March, 1898, he resigned his seat in the Lower Chamber as a result of the charges brought against him in connection with extensive swindles perpetrated on the Banca d'Italia. Save for a few articles which he published in favor of the Triple Alliance, he took no further active interest in affairs, and he died on Aug. 11, 1901, at Naples. Crispi was the greatest statesman that southern Italy gave to the united kingdom. In his lifetime he was much misunderstood and maligned. Distrusted by the Conservatives as a Radical and Republican, he incurred the hostility of the Republicans by his famous dictum in his letter to Mazzini, March 18, 1865, "Monarchy unites us, while a republic would separate us." From that time he was a firm supporter of the monarchy, but never a friend of the court. Consult: Stillman, *Francesco Crispi, Insurgent, Exile, Revolutionist, and Statesman* (London, 1899); T. Palamenghi Crispi, *Francesco Crispi, questioni internazionali* (Milan, 1913); also the translation of his memoirs into English by Agnetti (London, 1912).

CRISPIN. A saint and martyr of the third century, who was descended from a noble Roman family. With his brother Crispinianus,

he fled during a persecution of the Christians from Rome to Gaul, where he worked as a shoemaker in Soissons and distinguished himself by his exertions for the spread of Christianity as well as by his works of charity. According to the legend, his benevolence was so great that he even stole leather to make shoes for the poor! From this, charities done at the expense of others have been called Crispinades. In the year 285 or 286 he and his brother suffered a cruel martyrdom. Both brothers are commemorated on the 25th of October. Crispin is the universally recognized patron saint of shoemakers. Consult Butler, *Lives of the Saints*, for October 25, *The Accurate History of Crispin and Crispinianus, the Royal Shoemakers* (Dublin, 1816); *Saint Crispin and the Gentle Craft* (London, 1868).

CRISPIN. 1. The old name for shoemakers, applied to them from the fact that St. Crispin was their patron saint. 2. A conventional character in French comedy.

CRISPINO E LA COMARE, krě-spě'nò à là kô-mă'râ (It. The Cobbler and the Fairy). An opera by Ricci, first produced in Venice, Feb. 28, 1850, in the United States 1861 (New York).

CRISS CROSS ROW. See **CHRIST CROSS ROW**.

CRISTINOS, krě-stě'nòs (Sp., adherents of Christina). A political party in Spain during the regency of Queen Maria Christina, mother of Isabella II. They were opposed to the Carlists and upheld the Pragmatic Sanction of Ferdinand VII (q.v.), by which the crown of Spain was made inheritable in the female line. They were also known as Isabelinos.

CRISTOBAL DE LA LAGUNA. See **LAGUNA**.

CRISTOFORI, krě-stô'fô-rě, **BARTOLOMMEO** (1655-1731). An Italian harpsichord maker, and the inventor of the hammer action used in the modern pianoforte. He was born in Padua. After manufacturing instruments in that city until about 1687 he was persuaded by Prince Ferdinand, son of the Grand Duke Cosimo III, to remove to Florence. An authentic grand pianoforte made by the inventor in 1720 is said still to be preserved in Florence. See **PIANOFORTE**.

CRISTOFORO COLOMBO. An opera by Franchetti (q.v.) first produced in Genoa, Oct. 6, 1892, in America, Nov. 20, 1913 (Philadelphia).

CRISTUS, PETRUS (?-1473). A Flemish painter of the fifteenth century. He was born at Baerle, date unknown, and may have been a pupil of Jan van Eyck, who in any case influenced him strongly. As regards perspective and the treatment of landscape, Cristus is a step in advance of Van Eyck, in all else he is greatly inferior. His work is recognizable by the masklike appearance of the faces. His works include the portrait of Edward Grimstone (1446), now in possession of the Earl of Verulam; a Madonna in the Stadel Institute, Frankfurt; "St. Eligius" in the Oppenheim collection at Cologne. Two paintings in the Metropolitan Museum, New York, "A Virgin and Child" and "The Deposition from the Cross," formerly attributed to Jan van Eyck, are now assigned to Cristus.

CRITCHETT, R. D. See **CARTON**. R. C.

CRITIAS, krish'î-as (Lat., from Gk. Κρίτας, *Kritas*) (?-403 B.C.). An Athenian orator and

poet, the pupil both of Socrates and of Gorgias of Leontini. He was a leader in the oligarchical party at Athens and was exiled after the downfall of the Four Hundred in 411 B.C. After the subjugation of Athens by the Spartans he returned, and in 404 became head of the Committee of Thirty, known as the Thirty Tyrants, and was notorious for his cruelty. In 403 he was killed in battle, in the general revolt led against the Tyrants by Thrasybulus (q.v.). His activity was varied in the fields of oratory, tragic and elegiac poetry, and historical prose. Fragments of his elegies are in Bergk, *Poeta Lyrici Graeci*, vol. ii (Leipzig, 1900); of his historical work, in Müller, *Fragmenta Historicorum Graecorum*, vol. ii (Paris, 1868-83).

CRITIC, THE. A three-act farce by Richard Brinsley Sheridan in imitation of Buckingham's *Rehearsal*, produced at Covent Garden in 1779.

CRITICAL POINT. Experience shows that there is for every gas a certain temperature above which it cannot be liquefied, no matter how great the pressure exerted upon it. Thus, above 31.1° C. (87.98° F.) it is impossible to liquefy carbonic-acid gas; water cannot exist in the liquid state above 374° C. (705° F.), etc. Such temperatures are termed the critical points or critical temperatures of substances. The vapor pressure of a liquid at its critical temperature is termed the "critical pressure," and the specific volume of the substance at the critical temperature and under the critical pressure is termed the "critical volume."

The following table gives the critical temperatures and pressures for some of the more common substances (the critical pressures in terms of pounds per square inch may be obtained approximately by multiplying the pressures given in the table by 15):

SUBSTANCE	Critical temperature (centigrade)	Critical pressure (in atmospheres)	By whom and when determined
Acetic acid	+327.11°	57.11	Young (1910)
Acetone	+232.8	52.2	Sajotschewski (1878)
Acetylene	+35.5	61.6	Cardoso (1910)
Alcohol	+243.1	62.96	Young (1910)
Ammonia gas	+130.0	115.0	Dewar (1884)
Amyl acetate	+320.18	..	Brown (1909)
Amyl alcohol	+348.0	..	Guldberg (1882)
Argon	-117.4	52.9	Ramsay and Travers (1901)
Benzene	+288.5	47.89	Young (1910)
Bromine	+302.2	..	Nadejdin (1885)
Carbolic acid	+419.2	..	Radire (1894)
Carbon dioxide	+31.10	73.00	Dorman (1908)
Carbon disulphide	+273.05	72.87	Battelli (1890)
Carbon monoxide	-139.5	35.5	Olazewski (1887)
Carbon tetrachloride	+283.15	44.98	Young (1910)
Chlorine	+146.0	93.5	Knietsch (1890)
Chloroform	+260.0	54.9	Sajotschewski (1878)
Cyanogen	+128.1	59.6	Cardoso (1910)
Ethane	+42.1	49.05	Cardoso (1910)
Ether	+193.8	35.61	Young (1910)
Ethyl acetate	+150.1	38.00	Young (1910)
Ethylene	+9.5	50.7	Cardoso (1910)
Fluobenzene	+286.35	44.62	Young (1910)
Helium	-208.°	2.5°	Kamerlingh-Onnes
Hydrobromic-acid gas	+91.3	..	Estreicher (1896)
Hydrochloric-acid gas	+51.0	81.5	Dorman (1908)
Hydrogen	-240.8	14.2°	Olazewski (1906)
Hydroiodic acid	+150.7	..	Estreicher (1896)
Iodine	+512.°	..	Radire (1894)
Iron	+3700.°	..	Kreischgauer (1907)
Laughing gas	+36.5	71.90	Cardoso (1910)
Marsh gas	-81.8	54.9	Olazewski (1885)
Mercury	+1077.°	456.°	Happel (1904)
Methyl chloride	+143.2	65.85	Baums (1908)
Naphthalene	+468.2	39.2	Guye and Mallet (1901)
Neon	-205.°	29.0	Ramsay and Travers (1901) and Kamerlingh-Onnes (1909)
Nitron	+104.5	62.4°	Rödorf (1909)
Nitrogen	-146.0	33.0	Wroblewski (1885)
Oxygen	-118.8	50.8	Olazewski (1885)
Pentane	+197.2	34.04	Young (1910)
Pyridine	+344.27	..	Radire (1894)
Sulphur dioxide	+157.0	78.25	Cardoso (1910)
Sulphuretted hydrogen	+100.4	89.35	Cardoso (1910)
Toluene	+320.6	41.6	Altshul (1893)
Turpentine oil	+376.0°	..	Guldberg (1882)
Water	+374.0	217.5	Holborn and Baumann (1910)
Wood alcohol	+240.0	78.50	Young (1910)
Xylene	+246.6	35.8	Altshul (1893)

CRITICAL ANGLE. See LIGHT.

CRITICAL PHILOSOPHY, or **CRITICISM.** The name applied to Kant's philosophy, because it was not willing to accept all dicta that seemed to have the support of reason (see DOGMATISM), but sought critically to investigate the conditions of the possibility of knowledge and rejected all so-called knowledge that did not conform to these conditions. See KANT.

The critical temperature of a liquid is usually determined by introducing the liquid into a strong-walled glass tube about 3 or 4 millimeters in internal diameter. The tube is sealed at one end and drawn out to a thin capillary at the other end. It is at first filled with the liquid completely, then about one-third of the liquid is allowed to boil away, and the capillary end is sealed off without allowing the air to enter. The two-thirds-full tube is now placed

in an appropriate bath, and the temperature is gradually raised. As the critical point is approached, the liquid meniscus is seen to become fainter and fainter; and when the critical temperature is reached, the meniscus disappears altogether. For a short time the tube looks as if filled with a cloud of bluish smoke in up and down commotion; then this too disappears, and the contents of the tube are perfectly homogeneous: all is vapor. If the temperature is now allowed to fall, a similar phenomenon occurs as the critical point is reached from above, the meniscus reappears, and the contents of the tube are again divided into two layers, liquid and vapor. In this manner, if the liquid is only pure enough, the critical temperature can be determined within a tenth of a degree. A convenient modification of the method has been recommended by Knietzsch, according to whom the glass tube as described may be replaced by a thin glass capillary—which requires, of course, less liquid for a determination and is easier to manipulate.

A simple method for determining the critical pressure was devised in 1893 by Altschul in Ostwald's laboratory. A strong-walled capillary tube of glass is filled, half with the liquid under consideration and half with mercury. The upper end is sealed; the lower (mercury) end is firmly connected with a narrow copper tube filled with paraffin oil and leading to a small pump which is likewise filled with oil. The pump is also connected with a spring gauge indicating pressures within a tenth of an atmosphere. Now the extreme upper end of the glass tube is heated *above* the critical temperature of the liquid, so that the liquid within the tube becomes divided into two portions—an upper which is completely gasified, and a cooler lower one which remains liquid. But, as a general rule, there is no meniscus between the two portions. If, however, the pressure is now gradually raised, a moment arrives at which the meniscus appears at a certain point in the tube, viz., at the point where the temperature is equal to the critical temperature of the liquid. For at that temperature and under the critical pressure liquid and vapor are in equilibrium and therefore normally separated by a meniscus. The critical pressure sought is thus the pressure at which a meniscus appears in the fluid.

The critical temperature, as well as the critical pressure, of *mixtures* is usually intermediate between those of the components, and according to Pawlewski's rule each component contributes its property in proportion to its percentage amount in the mixture. This rule, however, is only a rough approximation to the truth. A similarly crude empirical rule is that of Guldberg, according to which the critical temperature of a single liquid (on the absolute scale, i.e., in centigrade degrees *plus* 273) may be calculated by multiplying the temperature of the boiling point (again on the absolute scale) under normal atmospheric pressure by 1.55. For instance, the boiling point of ether is 35° C., or 35 + 273 = 308° absolute. $308 \times 1.55 = 477.4$; $477 - 273 = 204^\circ$, and this should, according to Guldberg's rule, be approximately the critical centigrade temperature of ether. As a matter of fact, that temperature is only about 194° C., or 10° lower. In some cases the agreement between Guldberg's rule and experiment is somewhat better, in other cases it is even worse.

As to the critical volume, the experimental determination is extremely difficult, and critical volumes are usually *calculated* on the basis of a reliable empirical rule found by Cailletet and Mathias and generally referred to under their names. It must be remembered that when a liquid is ordinarily heated it expands as the temperature rises, i.e., its density continuously diminishes; at the same time the density of its vapor continuously increases; with rising temperature, therefore, the densities of liquid and vapor tend to equalize, and finally at the critical point the densities become exactly equal. This is why all difference between liquid and vapor, and with it the separating meniscus, disappear. Cailletet and Mathias discovered that if the *arithmetical means* of the densities of liquid and vapor are plotted against the temperatures, the result is a straight line which at the critical temperature passes through the point indicating the critical density of the substance (and hence reveals also the critical volume). If, therefore, a few points are determined on this line at temperatures considerably below the critical point, where experimentation is still sufficiently convenient, the prolongation of the line to the critical temperature gives the desired density and volume, and the determination may be considered as quite reliable.

If two substances whose critical temperatures are respectively θ_1 and θ_2 are at two different temperatures T_1 and T_2 (all on the absolute

scale), such that $\frac{T_1}{\theta_1} = \frac{T_2}{\theta_2}$, they are said to be

at the same "reduced temperatures." Similarly, substances are said to be under the same "reduced pressures" when the pressures under which they are placed are equal fractions of their critical pressure π_1 and π_2 . Finally, they are said to have the same "reduced volumes" when their specific volumes are equal fractions of their critical volumes ϕ_1 and ϕ_2 . When at the same reduced temperature and under the same reduced pressure, substances are also said to be in *corresponding states*. A number of interesting theorems are connected with these "corresponding states." It can be shown, e.g., that when substances are at the same reduced temperatures and pressures their reduced volumes, too, are the same. Altogether the theory of corresponding states forms an important chapter of modern physical chemistry, even though many exceptions to it have been observed and not yet accounted for.

The critical point of substances can be taken advantage of for passing from the gaseous to the liquid state of aggregation and conversely in a "continuous" way, i.e., without having to deal, at any moment during the process, with a mass consisting partly of liquid, partly of vapor, and hence having two different specific volumes. Thus, remembering that the critical temperature of carbonic acid is 31.1° C. and its critical pressure 73 atmospheres, let it be required to transform continuously a given amount of the gas into liquid. To accomplish this we may first heat the gas, say, to 35° C., raise the pressure, say, to 80 atmospheres, and then, keeping the pressure unchanged, let the temperature fall, say, to 20° C.; we shall then find the substance entirely liquid; for a sudden liquefaction of the entire mass (without separation into a layer of liquid and one of

vapor) will have taken place when, during the process of cooling, the temperature of 31.1° is reached. At no moment will liquid have existed simultaneously with gas. Similarly, if it should be required to transform continuously a given amount of liquid carbonic acid into gas, we might proceed as follows: lower the temperature, say, to 20° C., raise the pressure, say, to 80 atmospheres, and then allow the temperature to rise, say, to 35° C.; we should then find the substance entirely gaseous, without, however, the mass having at any moment during the process consisted partly of liquid, partly of gas. Continuous changes like those just described were at one time expected to break down the barrier between the gaseous and the liquid states of aggregation, and to permit of extending to liquids the simple gas laws. For, at least at the critical point, liquids and their vapors are identical in physicochemical properties and must therefore be governed by the same laws. But the hope has not yet come true.

Consult Van der Waals, *Die Continuität des gasförmigen und flüssigen Zustandes* (2 vols., 2d ed., Leipzig, 1899-1900). Simpler accounts of the subject may be found in the works on physical chemistry recommended in the article CHEMISTRY (q.v.). See also GASES, GENERAL PROPERTIES OF. HEAT.

CRITICISM (Fr. *criticisme*, from Lat. *criticus*, Gk. *κριτικός*, *kritikos*, critic, from *κρίνειν*, *krinein*, to judge). Criticism, as the art of judgment, whether favorable or adverse, is applicable in all fields of human accomplishment, and all inventions, all institutions, all life, are, broadly speaking, within its scope. It is, however, with literature and with art that criticism has most significantly busied itself, with the result that the term has come to mean the interpretative study of those greatest expressions of man's nature. The *Poetics* of Aristotle for centuries been regarded as the first important work of criticism, and many of the rules there laid down have maintained their value to this day. Aristotle's manner of approach was the scientific method of induction, and his understanding of the fundamental laws of human nature, his perception of those traits, emotions, and desires which, transcending any one age, belong to the men of all ages, underlaid and formed the firm basis of his criticism. Briefly summarized, Aristotle's chief doctrines were that all art and literature should have as function the pleasure-giving representation or "imitation" of what was universal—appertaining to all human nature, and not particularly or insignificantly individual; and that great art was measured by the high and lasting pleasure it afforded to society. To study the impressive works that have stood the test of time—the Bible, Homer, Vergil, Dante, Shakespeare, Milton, and lesser but well-loved poets—in the light of Aristotle's illuminating laws, is to discover how striking in its essence is the similarity in the greatest art; the sameness of man's soul, its passions and aspirations, remaining the keynote of art as it is of life.

The technical side of criticism—questions of metrical and dramatic construction and minor points of style—was approached by Aristotle, and the systematic nature of the *Poetics* is probably the chief reason for the reaction that has now and again set in against what is sometimes termed purely academic criticism. Yet it is just because Aristotle appreciated and

showed that all art must have laws that the student will find him so useful; more so even than Plato, whose lightning flashes of interpretation must be ranked with the highest creative critical literature. The critical writers after Aristotle are so numerous—Greek, Byzantine, Latin—and for the most part so occupied with the linguistic phase of composition, that one is glad to pass by almost all their rhetorical treatises until there looms up in the third century the figure of Longinus, whose refreshing enthusiasm for the beauty of letters places him above the mechanical student of rules. Notable among his Latin predecessors were Cicero, Horace, and Quintilian, whose observations on style have been of permanent service. From the time of Quintilian to Dante there is no great name in criticism, nor is this to be wondered at when one reflects that the mediæval attitude towards literature was, on the whole, that of distrust and disapprobation. Dante's poetry was so overshadowed his critical treatises that there are probably many lovers of the *Divine Comedy* who have no conception of the interest of the master's reflections on poetic form and beauty, nor any knowledge of his limitations of the subject matter of great poetry to love, war, and virtue, or moral philosophy. Of more service than Dante's treatises were the writings of the poets and critics of the Italian Renaissance. Through them the classical tradition was passed on to England and to the rest of Europe: in art and literature, as in science and in politics, the Italy of the Renaissance was the great rejuvenator and originator in the realm of the intellect.

In more modern times the names of Corneille, Boileau, Voltaire, Diderot, Hugo, and Sainte-Beuve in France, of Kant, Schiller, and Lessing in Germany, of Sidney, Pope, Addison, Dryden, Wordsworth, and Shelley in England, represent differing views and opinions. Boileau's *Art poétique*, reminiscent of Horace's *Ars Poetica*, and Pope's *Essay on Criticism* have their distinct value as volumes of often authoritative formal instruction, furnishing useful analyses of the different kinds of verse compositions. Of far more worth is Sir Philip Sidney's *Defense of Poesie* (an essay richly reminiscent of the Italian Renaissance), wherein he quaintly reminds us that "though the poet cometh to you with words set in delightful proportion," yet "it is not rhyming and versing that maketh a poet." Lessing's great achievement was to disperse the fog that Corneille had raised around the dramatic principles of Aristotle, and by clarifying the classic doctrines, to make possible their application to all art under modern conditions. And here, without going into any details concerning any present-day doctrines, even though they be so interesting as the evolutionary theories with which we readily connect the name of M. Brunetière, it may be well to suggest the wider paths open to criticism through modern conditions. The Greek and Roman critics had only their own work to study. We of to-day have the dramas, the epics, the novels of many nations and ages. The study of comparative literature, now possible, opens up opportunities for tracing those influences which affected the literatures of all Europe, and affords the student the chance of building up from varying yet interrelated sources a standard of criticism. The differences due to national character and individual genius

will teach him the limitations of hard and fast formal rules, while his faith in the fundamental canons of great art can only be made firmer by such comparative study. He will learn that criticism is of use as a method of judgment for the reader, rather than an inspiring guide to the poet, whose highest achievements are never the result of the rules whose vitality they attest. The critic who disregards the universal message of great art and, maintaining that there is no disputing concerning taste, claims for his personal opinion as much value as can attach to any judgment, rejects for his impressionistic mess of pottage the birthright of many ages of culture. The subjective element of criticism is not, however, precluded by the positive laws revealed through the inductive method applied to works of art. As Lowell pointed out in his essay on *Don Quixote*, a book is great in proportion to what can be gotten from it, and many an artist has builded better than he knew. The individual critic can be so keen and yet true in his interpretations and so inspiring in his expression as to make his criticism itself creative literature. The qualities which are necessary to the ideal critic are, therefore, not alone knowledge of human nature and of the characteristics of the literature which has endured; he must himself have true power of intuition, sympathy combined with impartiality in judgment, a rational appreciation of the relative importance of form and content, the sense of beauty which will enable him to judge style, and the capacity for making others see what he sees. Method and technique are always valuable, and Americans have much reason to be grateful to Child and Ticknor and Longfellow for their contribution to America's scholarship, for criticism is to be thought of, first of all, not as a formidable and narrowing system, but indeed as a broad viewpoint, occupying the same relation to literature that literature holds to life; and as law is the condition of true liberty in life, so criticism is the bar to anarchy in literature. "We do not possess what we do not understand," said Goethe. The true critic, like the rhapsodist of old, can be the connecting link between the artist and the public, leading his readers to understand the beauty of a work and so to possess it. The technical beauty may well be a matter of formal development, but the emotional beauty and appeal rest on the basis of the essential oneness of human nature, whether in the days of Athens, of Rome, of London, or of New York.

Criticism thus understood is freed from the charges to which certain critics have exposed it. It is not, on the side of form, a narrowing method of petty rules, but a rational study of fitting construction and adequate expression; on the side of content, its most lasting dicta are opposed to the contention of those who, like Ruskin, would make art a handmaiden of morality. It does not restrict genius, because genius precedes it, and genius connotes the sense of form and beauty, and can but be aided by reference to the simple laws of formal beauty. As the art of judgment concerning the fairest flowering of the human spirit, criticism has one of the highest of judicial functions; as the art of interpretation, admitting individual intuition and inspiring teaching, it has a creative function of wide and lofty worth.

Consult the following representative works: S. H. Butcher, *The Poetics of Aristotle* (Lon-

don, 1898); H. L. Havel and Andrew Lang, *Longinus on the Sublime* (ib., 1890); Horace, *Ars Poetica* (translations are easily accessible); Sir Philip Sidney, *Apologie for Poetrie* (c.1581, and published subsequently as *The Defense of Poesie*; easily accessible in recent editions). English critical thought in the sixteenth and seventeenth centuries is well represented, with scholarly commentary, in G. G. Smith, *Elizabethan Critical Essays* (2 vols., Oxford, 1904); P. H. Frye, *Dryden and the Critical Canons of the Seventeenth Century* (University of Nebraska, 1907); and *Critical Essays of the Seventeenth Century* (3 vols., Oxford, 1908-09), ed. J. E. Spingarn. Consult too: Boileau, *L'Art poétique* (1674, easily accessible in recent editions and in translation); Alexander Pope, *Essay on Criticism* (1711); Shelley, *Defense of Poetry* (published in 1840, easily accessible in recent editions); Coleridge, *Literary Criticism* (Oxford, 1908); Matthew Arnold, *Essays in Criticism* (1st series, 1865; 2d series, 1868), and passim; Walter Pater's works, passim. See also the critical writings of Goethe and Lessing, and of Sainte-Beuve, Taine, Brunetière, and Anatole France. The works cited may be supplemented by the following: J. E. Spingarn, *Literary Criticism in the Renaissance* (New York and London, 1899); C. M. Gayley and F. N. Scott, *Introduction to the Methods and Materials of Literary Criticism* (2 vols., Boston, 1899); G. E. Woodberry, *A New Defence of Poetry* (New York, 1900); George Santisbury, *History of Criticism* (3 vols., London, 1902-04); Théry, *Histoire des opinions littéraires* (Paris, 1849); Bourgoing, *Les maîtres de la critique au XVIIIe siècle* (Paris, 1889); P. Hamelius, *Die Kritik in der englischen Litteratur* (Berlin, 1897).

CRITICISM, BIBLICAL. See EXEGESIS.

CRITICISM, TEXTUAL. See TEXTUAL CRITICISM.

CRITIQUE DE L'ÉCOLE DES FEMMES, krä'ték' de la'kól' dá fam (Fr., criticism of the School for Wives). An amusing comedy by Molière, produced June 1, 1663, written in defense of his earlier comedy, *L'École des femmes*, which had been attacked by Le Visé, editor of *Le Mercure galant*, in the third series of his *Nouvelles nouvelles*. It consists of a discussion of the merits of the former piece, chiefly carried on between a hypercritical marquis and an amiable chevalier.

CRITIQUE OF PURE REASON, kri-täk' (Ger. *Kritik der reinen Vernunft*). A philosophical work by Immanuel Kant (1781), the basis of modern German philosophy.

CRITIUS, A Greek sculptor. See HARMONIUS AND ARISTOGITON.

CRITO (Lat., from Gk. Κρίτων, *Kritôn*). A wealthy friend and disciple of Socrates. He arranged for his master's escape from prison, but Socrates refused to take advantage of the plan. Plato's dialogue representing the last conversation between Socrates and Crito bears the latter's name.

CRITOLAUS (Lat., from Gk. Κρίτολαος, *Kritolaos*). A Greek philosopher, born at Phaselis, in Lycia, in the second century B.C. He succeeded Aristotle of Ceos as the head of the Peripatetic school at Athens and acquired a high reputation as a philosopher and orator. About 155 B.C. he went to Rome, and, with Carneades and Diogenes, obtained a remission of the fine of 500 talents which the Romans had

imposed upon Athens for the destruction of Oropus. See CAERNEADES.

CRITTENDEN, GEORGE BIBB (1812-80). An American soldier, the son of J. J. Crittenden (q.v.). He was born at Russellville, Ky., graduated at the United States Military Academy in 1832, served with distinction in the Mexican War and was promoted to be lieutenant colonel (1856). He resigned and joined the Confederate army in 1861, was appointed major general, and was placed in command of southeastern Kentucky and a part of Tennessee. For his defeat at Mill Spring (1862), however, he was censured. He subsequently served as a volunteer, and from 1867 to 1871 was State Librarian of Kentucky.

CRITTENDEN, JOHN JORDAN (1787-1863). An American statesman, born near Versailles, Ky. He graduated at William and Mary College in 1807, served in the War of 1812, was a United States Senator from 1817 to 1819, United States District Attorney from 1827 to 1829, and a United States Senator again from 1835 to 1841. In 1841 he was appointed Attorney-General by President Harrison, but resigned when Tyler became President, and was again in the Senate from 1842 to 1848, after which he was Governor of Kentucky from 1848 to 1850. He was again Attorney-General under President Fillmore and in 1855 was a fourth time sent to the Senate. Although a Southerner, Crittenden consistently devoted his energy and eloquence to the preservation of the Union, and he exerted every effort, first, to avert the impending Civil War, and later to assist the Administration in its prosecution. In the Senate (1860-61) he urged unsuccessfully his famous compromise (See CRITTENDEN COMPROMISE.) Retiring from the Senate in 1861, he served one term in the House, and in that body also strove for the supremacy of the Constitution. Consult *The Life of John J. Crittenden*, by his daughter, Mrs. Chapman Coleman (2 vols., Philadelphia, 1871).

CRITTENDEN, THOMAS LEONIDAS (1815-93). An American soldier, the son of John Jordan Crittenden, born in Russellville, Ky. He was a private in the Kentucky Volunteers in 1836, studied law, and in 1842 became commonwealth's attorney. During the Mexican War he served as lieutenant colonel under both General Taylor and General Scott and, when the former became President, was appointed United States Consul at Liverpool. He entered the Federal army at the beginning of the Civil War, became a brigadier general of volunteers in October, 1861, and for his services at Shiloh, where he commanded a division, was raised to the rank of major general (July 17, 1862). He afterward commanded a division under General Buell and took an important part in the battles of Murfreesboro and Chickamauga, but resigned from the service in December, 1864. He entered the regular army as colonel of the Thirty-second Infantry in 1866, was brevetted brigadier general in 1867, and served on the frontier until his retirement in 1881.

CRITTENDEN COMPROMISE. In American history, a measure proposed in Congress in 1860 by Senator J. J. Crittenden (q.v.) as a means of preventing the secession of the Southern States, through the adoption of certain constitutional amendments. These amendments were five in number, and provided: (1) that the right to property in slaves was to be recognized, and

that slavery was to be permitted and protected in all the common territory south of 36° 30' and prohibited north of that line, while the land remained in its territorial status; (2) that Congress was not to have power to abolish slavery in the places under its exclusive jurisdiction which lay within a State where slavery existed; (3) that Congress was to have no power to abolish slavery in the District of Columbia so long as it existed in either Maryland or Virginia, and then only after the owners of the slaves had been compensated; (4) that Congress was to have no power to prohibit or hinder the transportation of slaves from one State to another, or to a Territory where slavery was legal; (5) that Congress might provide that in cases where escaped slaves were rescued, or their arrest prevented by mobs, the owners should be compensated by the United States, which in turn might recover damages from the county in which the illegal act occurred. All of these amendments were to be permanent and "unamendable." The compromise was defeated in a committee of the Senate and failed of consideration in the House.

CRITTENTON, CHARLES NELSON (1833-1909). An American philanthropist, born in Adams, Jefferson Co., N. Y. He went into the drug business in New York City in 1861; but after 1882, when his five-year-old daughter Florence died, he devoted his time and wealth to the establishment of Florence Crittenton Homes for homeless and unfortunate girls and their infant children. In 1895 the National Florence Crittenton Mission was incorporated to carry on this work. Of these mission homes more than 70 were organized in Mr. Crittenton's lifetime in all the larger cities of the United States and in Marseilles, Tokio, Shanghai, the city of Mexico, etc. The drug-manufacturing company which bore his name was one of the first profit-sharing concerns in the United States. He was an active member of the Prohibition party.

CRITTENTON MISSION. See FLORENCE CRITTENTON MISSION; CRITTENTON, C. N.

CRIVELLI, kra-vèl'la, CARLO (c.1430-c.1495). A Venetian painter of the early Renaissance. He was born in Venice, probably the son of Jacopo Crivelli, a painter, and studied with Antonio and Bartolommeo da Murano, and was later influenced by the schools of Padua and Ferrara. Of his life in Venice nothing is recorded except that he was convicted of adultery in 1457, and this was probably the cause of his leaving Venice, never to return. In 1468 he began his work in the Marche, where he practiced the remainder of his life, residing after 1473 in Ascoli. In 1490 he was named "Miles," and shortly before his death "Equus Laureatus" by Ferdinand II of Capua, as the signatures of his later paintings proudly record. Among his early works are a "Madonna" in the Verona Museum, and a "Pietà with Saints" in the Berlin Gallery, which show the influence of Negroponte and Squarcione. After he left Venice in 1457, his works, owing to Mantegna's influence, increased in earnestness and pathos and improved in color and technique, as is shown in the altarpiece in five compartments with predella in the cathedral of Ascoli (1473) and "St. George on Horseback" in the Gardner collection, Boston. In the so-called "Domidoff Altarpiece" (1476), in 13 compartments (National Gallery, London), he has fully developed an individual style, and between 1480 and 1490

he reached the height of his power. At this time he painted the "Madonna" in the Vatican Gallery, the triptych "Madonna" in the Brera, the "Pieta" in the Boston Art Museum, the same subject in the Johnson collection, Philadelphia, the "Madonna with St. Peter and six Saints" in the Berlin Gallery, and "The Annunciation" in the National Gallery. Such works combine grace, charm, and elaborate idyllic accessories with intense pathos and fervid religious feeling. They are characterized by wonderful strength of line and a metallic lustre of color. Both in technique and sentiment Crivelli was a conservative and stood apart from the general development of Venetian painting. He painted only in tempera and maintained the early scheme of division of his altars into separate panels. He excelled in the treatment of such isolated figures, which, although stiff and archaic, are in expression calm and deep as the sea. After 1490 his work shows less originality and intensity but more perfect technique and increasing, almost riotous, ornamentation. "The Coronation of the Virgin" (1493) and the "Madonna della 'andeletta,'" both in the Brera, are good examples of his latest style. Consult Berenson, *Venetian Painters of the Renaissance* (New York, 1909), and Rushforth, *Carlo Crivelli* (London, 1909).

CROAKER. See DRUM; GRUNT; QUEENFISH. **CROAKER AND CO.** The pseudonym adopted by Joseph Rodman Drake and Fitz-Greene Halleck in the *Croaker Pieces*, in the *New York Evening Post* (1819).

CROATAN, kró'tán'. An island off the coast of North Carolina, south of Roanoke Island, at the time of the first English attempt at colonization, about 1585. By the shifting of the sands it is now probably a part of Hatteras or Ocracoke Island. A colony of 117 persons who were landed by Sir Walter Raleigh upon Roanoke Island in 1587, and of whose ultimate fate nothing definite was ever afterward learned, is supposed to have taken refuge with friendly Indians upon Croatan Island and to have eventually become absorbed into that tribe. Recently new interest has been given to the story through the claim of descent from these colonists, asserted by a considerable body of mixed-blood stock in Robeson County, in the southern part of the State. Although their claim has probably no sound historical basis, they have been officially recognized by the State as a separate people under the name of "Croatan Indians." According to the census of 1910 they numbered 5865.

CROATIA (kró-á'sh-i-á) AND **SLAVONIA** (Slav. *Hrvatska i Slavonija*, Hung. *Horvát-Slavonország*, from Croat, *Hrvat*, Ochurch Slav. *Khrvatina*, Slov. *Khrvat*, Pol. *Karwat*, Russ. *Khróvate*, Croat, and Ochurch Slav. *Slavieninā*, Russ. *Slavyaninā*, MGk. *Ἑσλαβηνός*, *Esclabénos*, a Slav, whence Ger. *Sklave*, Eng. *slave*). A kingdom of Austria-Hungary, constituting one of the lands of the Hungarian crown (Map: Hungary, D 4). It is separated by the Drave and the Danube from Hungary proper on the northeast, by the Save from Serbia and Bosnia on the south, has Dalmatia and the Adriatic on the southwest, and Styria, Carniola, and Istria on the west. Croatia constitutes the southwest portion; Slavonia, the northeastern part. Its area is 16,425 square miles.

A large part of the surface consists of mountain chains ranging in height from about 2000

to 4000 feet, principally spurs of the Julian and Styrian Alps. In Croatia are the Agram highlands, the Croatian Karst (see KARST), with an elevation of about 500 feet, the two ranges of Great and Little Kapella, the former reaching a height of about 500 feet, and the Velebit Range, whose highest summit is about 5750 feet. On the borders of Carniola are the Uskok Mountains. The beautiful mountain region on the northwest is called "Croatian Switzerland." The interior along the Save consists of an extensive and fruitful valley. The eastern part contains fertile, well-cultivated valleys, while the western part is covered with forests. There are several small rivers flowing into the Save and Drave, and a number of lakes on the coast. The Kulpa River, a tributary of the Save rising in Carniola and flowing across Croatia, is generally considered the northern boundary of the Balkan Peninsula.

The climate is not uniform throughout the kingdom. Along the coast of Croatia the summers are dry and the winters long with considerable precipitation, but the annual range of temperature is less than in Slavonia. In this western portion the winters are very raw, and the land is subject to the bora, a cold, fierce northeastern wind, which renders navigation dangerous and brings heavy snows to the highlands. In the interior the continental type of climate prevails, with winter temperatures frequently below zero and excessive summer heat. In parts of Slavonia the climate is very insalubrious on account of numerous swamps. The soil is fairly fertile, and the range of vegetation very wide. About 32 per cent of the productive area is arable land, 23 per cent is in meadows and pastures, 38 per cent is under forests, and 1 per cent is covered with vineyards. The common European cereals are raised extensively, especially wheat and corn. The yield of potatoes is considerable. Fruits are grown in abundance, notably apples, plums, nuts, and grapes in the southern part of the country. Agram in Croatia is the capital and railroad centre. A number of railroads under government control cross the kingdom, and over 2000 miles of highways have been constructed.

The mineral production of Croatia and Slavonia is unimportant. Some coal, iron, marble, copper, and sulphur figure in the exports. There are but few modern industrial establishments, the bulk of the manufactures originating in the domestic industry of the peasant families. There are some silk mills, glass and sugar mills, a few shipbuilding, milling, paper, and leather establishments in the coast districts, and a number of distilleries and breweries. The plum brandy of Slavonia is famous under the name of "Slivowitz." There is a considerable transit trade, largely carried on through the ports of Fiume, Zengg, and Porto Ré. The chief articles of export are grain, fruits, wine, lumber, flour, horses, and swine. The crownland had, in 1911, 11,997 miles of public roads and 1329 miles of railway. Of the railway, 541 miles were owned by the state, and 536 were also operated by the state though privately owned. Agram (Zágráb) is the principal railway centre. There is water transportation on the Danube, Save, Drave, and Una.

Croatia and Slavonia, a titular kingdom, is autonomous in its internal affairs. Its executive head, or governor, is the Ban, responsible to the Provincial Diet and to the Hungarian Pre-

mier, who appoints him with the approval of the King (the sovereign of Austria-Hungary). There are three ministries—Interior, Public Instruction and Worship, and Justice. The Diet, or National Assembly, is a single chamber of 88 elected deputies and certain privileged members, as the heads of the nobility and high ecclesiastics and officials. The privileged members, who must not exceed in number half the deputies, usually sympathize with Hungarian policy. The crownland is represented by three members in the Upper House and 40 in the Lower House of the Hungarian Parliament and is entitled to a minister in the Hungarian cabinet, who countersigns all important acts affecting it. In 1908 the revenue of the autonomous government was 25,619,000 kronen, and the expenditure 24,710,000 kronen. The crownland is divided into eight counties and four municipal towns.

The facilities for both elementary and secondary education are improving. In 1910, 52.6 per cent of the population over six years of age could read and write, as compared with 44.4 per cent in 1900. Agram (q.v.), the capital, has a university. The population in 1890 was 2,201,927; in 1900, 2,416,304 (9.7 per cent increase); in 1910 (census of December 31), 2,621,954 (8.5 per cent increase). The last census returned by language 62.5 per cent of the people as Croats, 24.6 per cent Serbs, 5.1 per cent Germans, and 4.1 per cent Hungarians. The percentage of Roman Catholics in 1910 was 71.6, and Greek Orthodox 24.9. Agram had 79,038 inhabitants; Eszék (Esegg, Osjek), 31,388; Zimony (Semlin), 17,131; Károlyváros (Karlstadt, Karlovac), 16,112; Varasd (Warasdin), 13,398. Average birth rate, 1906–10, 40.4; 1911, 36.8; death rate, 25.0 and 25.1, illegitimacy, 7.3 and 7.9 (for Hungary proper, 9.7 and 9.5).

History. Croatia and Slavonia were included in the Roman Province of Pannonia. The Croats are a southern Slavic people, speaking a language which differs but slightly from that of their neighbors the Serbs. They came down in the seventh century from the Carpathians. In the ninth century the Croats adopted Latin Christianity, while the Serbs received Christianity from Constantinople. About the year 910 Croatia asserted its political independence of the Byzantine emperors and under its own king extended its power over Bosnia and Dalmatia. A great part of Croatia was annexed to Hungary towards the close of the eleventh century, and in 1102 Koloman of Hungary had himself crowned King of Croatia and Dalmatia. The country was involved in the dynastic struggles and wars for self-preservation which were the lot of Hungary for centuries. In the great democratic and nationalistic uprising throughout Europe in 1848 Croatia played a prominent rôle. By stirring up the race prejudice of the Croats against the Hungarians the reactionary Austrian government was enabled to subdue the great Hungarian rebellion in that year, Jellachich, Ban of Croatia, acting as the ready tool of Austria and the Hapsburg dynasty. After the revolution Croatia was ruled by the Hapsburgs in a purely despotic fashion for 10 years. It was then incorporated again in Hungary by a compromise treaty which gave the Croats representation in the Hungarian Diet. Hungary, however, annexed Fiume outright, and the Croats, far from satisfied with the compromise, have never ceased to demand complete autonomy. The occupation and subsequent annexation of Bosnia

and Herzegovina by Austria-Hungary, with their large Croatian population, has given additional fervor to this desire, and it has been made a constant issue, throughout the last 40 years, by a succession of riots. The more serious of these occurred in 1883 and 1903. The recent Balkan War (q.v.) fanned the flame still further, and the Croats, aroused by the success of their neighbors, the Servians, took occasion to renew their demands with unusual vehemence. Consult: Matkovich, *Kroatien und Slavonien nach seinen physischen und geistigen Verhältnissen* (Agram, 1873); Kruss, *Die vereinigten Königreiche Kroatien und Slavonien* (Vienna, 1889); Lukšić, *Führer durch Ungarn, durch Kroatien und Slavonien* (Vienna, 1902). See AUSTRIA-HUNGARY.

CROCE, krò'chè, BENEDETTO (1866–). An Italian philosopher and critic. He was born at Pescasseroli (Avezzano), but early made Naples his residence. His contributions to literary history are of the first importance, both for bulk and for rigorous method coupled with enormous erudition. Typical of his specialization on Spanish influences in Italy and on the writers and general intellectual history of Naples, are *Studi letterari del seicento* (Bari, 1910), *I teatri di Napoli* (Naples, 1890), and the critical editions in his monumental series, *I scrittori d'Italia* (Bari, 1911), which, now continued by F. Nicolini, will reach 600 volumes. At the same time he stimulated a great revival of philosophical studies in Italy, collaborating with G. Gentile on the Bari series of *Classici della filosofia moderna* (24 vols.), to which he contributed important works on Vico and Hegel. A world-wide influence has been exerted by Croce's *Filosofia dello spirito*, a work in three parts: *Estetica* (new ed., Bari, 1908), *Logica* (1909), *Etica* (1909), available in English translations by Ainslie (*Æsthetic*, London, 1909, *Ethics*, 1913; consult Ainslie in the *North American Review*, vol. 198 (1913), "Introduction to Croce's Philosophy of the Practical"). The *Estetica* is of the three most influential and, in spite of the animated criticism aroused by it, remains a classic. Proceeding from the criticism of Vico, whom he calls the "discoverer of the science of aesthetics," Croce sets himself against the Aristotelian and classic schools of aesthetics as well as against Lessing, Kant, Hegel, and other moderns. The cardinal point in his theory is the entire distinction of logic from intuition, logic dealing with the apprehension of *relationships*, of *universals*, intuition with the apprehension of the *particular*, the *individual*. The act of intuition is the act of *expression*: all expression is "art," and all art is expression. The creative act in art is the act of expression in the mind of the artist; the material execution of the work of art is posterior to this creative act, of which it is only a copy. Croce thus excludes from aesthetics the idea of "beauty" as it is commonly understood; questions of artistic "technique" become irrelevant to aesthetic criticism; while his insistence on the intuitive nature of art destroys the critical value of rhetorical categories, and the terminology of literary genres and artistic classification becomes devoid of sense, since each production is a work *sui generis*, representing a moment, a mental state, that has intrinsically nothing to do with any other mental state. The function of criticism becomes primarily interpretative, its object being to reconstruct the mental

state in its causal and final elements. The æsthetic judgment is possible only with reference to the intention of the artist and the extent to which that purpose has been realized.

Croce's methods are applied extensively, especially to Italian literature of the nineteenth century, in his journal *La Critica* (Bari, 1902-). Selected essays are given in *Problemi di estetica* (Bari, 1910) and the *Breviario di estetica* (Bari, 1913). A comprehensive application of the theory to grammar appears in Trabalza's *Storia della grammatica italiana* (Milan, 1908), and its influence appears in Germany in Karl Vossler's studies on the *Divine Comedy* of Dante. Croce's chief American interpreter is Spingarn, *The New Criticism* (New York, 1909). As an ethical teacher, Croce represents and leads in Italy the revolt against the attempt to treat the spirit in a materialistic or naturalistic manner, and therefore he is to be classed with Bergson and Eucken (qq.v.), in spite of the fact that he represents none of their anti-intellectual tendencies. The honorary senatorship of the kingdom was conferred on Croce in 1909, and he was chosen secretary of the Società Napolitana di Storia Patria and awarded an honorary doctorate by the University of Freiburg.

CROCE, GIULIO CESARE DELLA (1550-1609). An Italian story-teller, born at Persiceto, near Bologna. He wrote a number of romances and plays and created the world-famous types of Bertoldo, Bertoldino, and Cacasenno in the often translated *Astuzie di Bertoldo* and the *Simplicità di Bertoldino* (1620). Consult biography and bibliography by Guerrini (Bologna, 1879).

CROCHET, krō-shā' (Fr. *crochet*, hook, dim. of *croc*, hook, from Icel. *krókr*, hook, perhaps from Gael. *crocan*, Welsh *croeg*, hook, and connected with Lat. *cruz*, cross). A form of fancy-work where threads of linen, cotton, worsted, or silk are looped with hooks called *crochet* needles to form various decorative and useful articles. Endless varieties of patterns may be formed, and lightness and elegance attained, by twisting the thread one or more times in taking up the loop, while openwork is formed by passing one or more loops.

CROCIDOLITE (from Gk. *κροκίς*, *crokis*, nap on cloth; connected with *κροκή*, *croké*, thread, from *κρέκειν*, *krekein*, to weave + *λίθος*, *lithos*, stone). A sodium iron silicate of the amphibole group that occurs in fibrous or a-bestos-like filaments, and also sometimes massive or earthy. It has a silky lustre and is indigo blue to green in color. The best specimens are found in Grigalund, in the Orange River country, South Africa. This mineral frequently contains a siliceous base, such as ferruginous quartz, which imparts to it a golden yellow to yellowish-brown color, often handsomely mottled with the blue or green of the original mineral. This, when cut *en cabochon*, with a high summit and the longer diameter of the oval at right angles to the direction of the fibres of which the mineral is made up, yields the cat's-eye ray, in consequence of which the mineral is popularly known as *tiger-eye*, and has some value as a gem stone, being used when polished for umbrella handles, charms, etc. In the United States specimens are found in North Carolina, Pennsylvania, and Rhode Island, but these are of no value for ornamental purposes.

CROCKETT, FRANCIS BACON (1861-). An American electrical engineer. He was born

in New York City, received from Columbia University the E.M. in 1882 and the Ph.D. in 1894, and at Columbia was instructor in electrical engineering (1889-92), adjunct professor (1892-93), and professor thereafter. In 1892-95 he was president of the New York Electrical Society and in 1897-98 of the American Institute of Electrical Engineers. He published *The Practical Management of Dynamos and Motors* (1892), revised under the title *Management of Electrical Machinery* (7th ed., 1907); *Electric Lighting* (2 vols., 1896-1901; 8th ed., 1908); *Electric Motors* (1910). In 1914 he received an honorary M.S. from Columbia.

CROCKERY. See POTTERY.

CROCKET (from OF. *croquet*, variant of *crochet*, hook). An ornamental knob or leaf projecting boldly from a plane surface, or from the edge of a coping or gable, or from the hip or arris of a spire or pinnacle, or from the bell of a capital; usually in the form of a single heavy stem ending in leafage or flower. This ornament is probably derived originally from the corner volutes of the Corinthian type of capital with the acanthus leaves curled up under them. This form persists through all Romanesque styles and was developed by the Gothic architects into an independent ornament.

CROCKETT. A city and the county seat of Houston Co., Tex., 113 miles north of Houston, on the International and Great Northern Railroad (Map: Texas, E 4). It has a fine courthouse and the Mary Allen Seminary. Fruit, cotton, stock, and corn growing, lumbering, and the manufacture of cottonseed oil are the principal industries. The water works are owned by the city. Pop., 1900, 2612; 1910, 3947.

CROCKETT, DAVID (1786-1836). An American pioneer and politician, born in Greene Co., Tenn. He was a typical backwoodsman, unlettered but shrewd, and skillful as a hunter. He served under Jackson in the war against the Creek Indians, was elected to the Tennessee Legislature in 1821 and 1823, and in 1826, 1828, and 1832 was elected to Congress, where his oddities of dress attracted considerable attention. At the close of his third term he enlisted with the Texan forces, then in arms against Mexico, and in 1836 was one of the six survivors of the 140 defenders of the Alamo (q.v.), where, on March 6, the entire garrison was killed by Santa Anna's troops. Crockett was massacred by order of Santa Anna at his surrender. Crockett's well-known maxim was, "Be sure you are right, then go ahead." He very probably dictated or authorized *A Narrative of the Life of David Crockett* (1834); *A Tour to the North and Down East* (1835). He has been credited, probably erroneously, with *Exploits and Adventures in Texas* (1836); and *Sketches and Eccentricities* (1847), all of which are characterized by crude wit. The best popular biography is that by E. S. Ellis (Philadelphia, 1884).

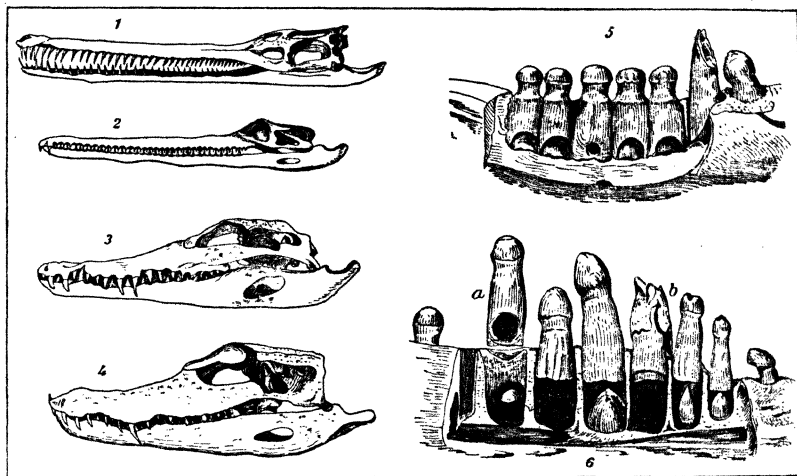
CROCKETT, SAMUEL RUTHERFORD (1860-1914). A Scottish novelist. He was born at Duchrae, Galloway; graduated at Edinburgh University in 1879. His first publication, *Dulce Cor*, a book of poems, appeared in 1886. He was Free Church minister at Penicuik until the close of 1894, when he resigned to devote himself to writing. He wrote, notably: *The Stickit Minister* (1893); *The Raiders* (1894); *Bog-Myrtle and Peat* (1895); *The Grey Man* (1896); *The Standard Bearer* (1898); *Joan of the Sword*

Hand (1900); *The Banner of Blue* (1902); *Red Cape Tales* (1904); *Maid Margaret* (1905); *The Bloom of the Heather* (1908); *The White Plumes of Navarre* (1909); *Love in a Pernicketty Town* (1911); *Anne of the Barricades* (1912); *Patsy* (1913); *Sandy* (1914).

CROC'ODILE (Lat. *crocodilus*, Gk. *κροκόδειλος*, *krokodeilos*). An aquatic lacertiform carnivorous reptile, comparatively gigantic in size (several feet in length), representing the extensive subclass Crocodilia, regarded as the most highly organized of reptiles; more strictly one of the type genus *Crocodilus*, of the family Crocodylidae, typical of the order Eustachia. Crocodilians differ from lizards in many points of structure, and prominently in the horny plates within the thick skin which form a

on by civets, a monitor lizard, and many other enemies. In warm countries crocodiles bury themselves in mud in times of drought, and in cold countries during winter. They feed on fish, birds, and mammals, and human beings are sometimes their victims. The necessity of taking small pieces of food, induced by their rigidly articulated jaws and unelastic throat, compels them to sink all their large prey and keep it until it is sufficiently macerated to be torn into small pieces.

All the species have a voice, described as a loud short bark or croak, heard at night or when the reptile is angry. The age to which they live is unknown, but they arrive at reproductive maturity when about 10 years old and seem to continue to grow for a century or more. Captives,



SKULLS AND TEETH OF CROCODILIANS.

1. *Teleosaurus* (extinct). 2. Gavial. 3. Nile crocodile. 4. American alligator. 5. Back part of the series of teeth of the lower jaw of an alligator, with the inner wall of the alveolar groove cut away, showing the absence of partitions and the germs of the successional teeth. 6. Middle part of the same series, showing the partitions, forming here distinct sockets from which the teeth are raised to show germs of successional teeth and dentiparous cavities; a, a tooth turned around to show the effect (a hole) of the new germ on its base; b, shell of an old tooth and two successors.

dorsal armor, and the firm setting of the strong teeth into alveoli, the fourth tooth often being much enlarged as a seizer. The skull has greater solidity, and the internal anatomy generally is much advanced. The heart has four distinct chambers, preventing an admixture of arterial and venous blood, and the organs of sense are well developed. Their limbs are of much more use to them in walking than are those of either turtles or newts, yet their real home is in the water, where they swim by means of twisting strokes of their compressed tails, which are also powerful weapons, and of aid in gaining food, since animals standing at the edge of a piece of water deep enough to permit a crocodile to swim close to the shore unobserved are frequently swept into the stream by a blow of the tail, then seized and drowned.

All crocodilians are oviparous. The eggs are about the size of those of a goose and are buried in the sand or mud to be hatched by the heat of the sun alone. The females of some, if not all, of the species guard them and take care of their young; yet the eggs and very young are preyed

and those often alarmed, show an ability to learn from experience.

"The recent geographical distribution of the various kinds of Crocodilia loses its mystery," says Gadow, "when we recollect that during the Tertiary period alligators, crocodiles, and long-snouted gavials existed in Europe. The solitary species of alligator in China is the last living reminder of their former Periarctic distribution. The group, taken as a whole, is otherwise now intertropical, crocodiles alone inhabiting the Paleotropical region, together with long-snouted forms in the Oriental subregion, while alligators and caymans, with a few crocodiles, live in America."

The order Eustachia contains the crocodilians, ancient and modern. Two other (extinct) orders are recognized by Gadow (1902), both small and peculiar groups known only in late Mesozoic rocks. The genus *Etosaurus* represents the order Pseudosuchia, and *Belodon* the order Parasuchia. These and other Mesozoic crocodiles were marine and seem to have been descended from some terrestrial dinosaurian stock. "So

far as modern reptiles are concerned, only the *Chelonia* and *Sphenodon* are related to the Crocodilia, while monitors and other lizards resemble them only superficially."

The crocodilians (Eustachia) fall into seven families: 1. Teleosauridae, fossil in the Lias and Oolite of Europe; marine, and of the general appearance of gavials, with very long and slender snouts (see Fig. 1). 2. Metriorhynchidae, fossil in the Upper Oolite of Europe; marine. 3. Macrorhynchidae, fossil in fresh-water deposits of Wealden, etc., of Europe. 4. Gavialidae, the gavials (see GAVIAL), fossil and recent. 5. Atopsauridae, fossil in the Upper Oolite of France; diminutive alligator-like reptiles, only about a foot long. 6. Goniopholidae, large fossil crocodiles of the late Mesozoic. 7. Crocodilidae, true crocodiles and alligators.

Of the crocodiles proper (which are characterized by their narrow, elongated heads and much-webbed feet), the best and longest known is the celebrated *Crocodilus vulgaris* of the Nile, which was revered, protected, and when dead embalmed, by certain sects of the ancient Egyptians. Crocodile worship, according to Flinders-Petrie, was indigenous, and one of the oldest worship of Egypt. It was most prevalent in Fayum, "the Lake of the Crocodile," whose marshy shores were especially favorable to that reptile, and which was the seat of the crocodile god Sebek. Up the Nile other places were devoted to this primitive worship, while at neighboring towns, such as Denderak, Apollinopolis, and Heracleopolis, it was detested. In the very earliest times the crocodile was regarded as a minister of vengeance, but not divine. Nowadays these animals are so much hunted that few remain in the lower Nile, but in its upper waters and in other African rivers crocodiles are still dangerously plentiful. The reptiles also abound in Madagascar; but the "common" one on the West Coast, from Senegal to the Congo, is *Crocodilus cataphractus*. Two species inhabit the fresh waters and estuaries of India (see MUGGER)—one ranging to Ceylon, and eastward to China, the Malay Islands, and Australia. A local species also inhabits northern Australia and Queensland. There are three crocodiles in North and South America and the West Indies. One (*Crocodilus americanus*) ranges as far north as Florida.

The eggs of crocodiles are prized by some people as food, the musk glands are taken for perfume, and the skin and fat are articles of considerable commercial value.

Consult Gadow, *Amphibia and Reptiles* (London and New York, 1902); and authorities on Egypt, Central Africa, India, Ceylon, and Australasia. See ALLIGATOR.

Fossil Forms. Fossil ancestors of the crocodilians are known from rocks as old as those of the Triassic, and they are found throughout the later rocks of Jurassic, Cretaceous, and Tertiary time. The more primitive forms, comprising the totally extinct suborder Parasuchia, are represented by *Belodon*, from the upper Keuper of Württemberg and the Triassic sandstones of North America; *Stagonolepis* of the Triassic of Scotland, and *Parasuchus* from the Gondwana series of central India. These three have long, narrow snouts, produced by the elongation of the premaxillary bones, and in the structure of their skulls they present some points of resemblance to the primitive dinosaurs and to the rhynchocephalians. The Mesosuchia of Jurassic age,

mostly reptiles of small size, have both long and short snouted forms, that differ from the Eusuchia in respect of the form of the palate, Eustachian tubes, and vertebrae. The principal genera are *Pelagosaurus*, *Metriorhynchus*, *Therapsuchus*, *Notosuchus*, *Teleosaurus*, *Stenosaurus*, from the Jurassic of Europe, and *Notochamps* from South Africa. The Eusuchia, also with both broad and long snouted species, range from the Upper Jurassic through the Cretaceous and Tertiary, and comprise all the recent species, in which the Eustachian tubes are inclosed by bone and the vertebral centra are procelous. Direct ancestors of the Malayan genus *Tomistoma* are found in the Miocene beds of the eastern Mediterranean region of south Europe. During the Eocene typical gavials lived in the seas of England, but they migrated southward during subsequent Tertiary time, and their remains are found fossilized in the Pliocene deposits of the Siwalik Hills of India. The largest-known crocodile was probably the genus *Rhamphosuchus*, from the Pliocene of the Siwalik Hills, India, with a length of over 50 feet.

Bibliography. Parker, "On the Structure and Development of the Skull in the Crocodile," *Zoological Society of London Transactions* (London, 1885); Tornier, "Die Crocodile," *Beihft zum Archiv für Naturgeschichte* (Berlin, 1901). For fossil forms, consult Dollo, "Première note sur les Crocodiliens de Bernissart," *Bulletin du Musée royal d'histoire naturelle de Belgique*, vol. ii (Brussels, 1883); Woodward, *Outlines of Vertebrate Paleontology for Students of Zoology* (Cambridge, 1898); Huxley, "On Stagonolepis and the Evolution of the Crocodilia," *Quarterly Journal of the Geological Society of London*, vol. xxxi (London, 1875); Woodward, "The History of Fossil Crocodiles," *Proceedings of the Geologists' Association*, vol. ix (ib., 1886); Gadow, "Amphibia and Reptiles," *Cambridge Natural History*, vol. viii (New York, 1902); Ditmars, *Reptiles of the World* (ib., 1910). See also ALLIGATOR, GAVIAL, NOTOSUCHUS, PELAGOSAURUS, TELEOSAURIUS, THERIOSUCHUS.

CROCODILE BIRD. A plover (*Pluvianus aegyptius*) of the Nile valley, placed among the coursers (suborder *Cursori*). It is remarkable for its association with the crocodile and now is usually identified with the *trochilus*, or "leech-eater" of Herodotus, whose account of it, long regarded as fabulous, is quoted by Stejneger as follows: "As the crocodile lives chiefly on the river, it has the inside of its mouth constantly covered with leeches, hence it happens that, while all other birds and beasts avoid it, with the trochilus it lives at peace, since it owes much to that bird, for the crocodile, when he leaves the water and comes out upon the land, is in the habit of lying with his mouth wide open, facing the western breeze; at such times the trochilus goes into his mouth and devours the leeches. This benefits the crocodile, who is pleased and takes care not to hurt the trochilus." Modern writers wholly denied this, but it is now known to be mainly true; i.e., these birds do run about the bodies of crocodiles asleep or basking on the sand, in search of the insects or crustaceans clinging to their hides; and may at favorable moments pick parasites and particles of food from their lips, teeth, and gums. This has been actually seen by such good observers as Alfred Brehm and others and has also been asserted of a related bird, the Egyptian lapwing. A very complete account of the evidence of this

fact, and for identifying this species with the bird of the Herodotus tradition, will be found in Newton's *Dictionary of Birds* (London, 1894), article "Plover." The colors of this species are lavender and cream, strikingly marked with black on the crown and on the sides of the head, the black stripes joining and passing broadly along the back and also extending down the sides of the breast. Consult Whymper, *Egyptian Birds* (London, 1909). See Plate of PLOVERS.

CROCODILE RIVER. See LIMPOPO.

CROCODILE TEARS. Hypocritical, forced expressions of grief. This use of the term has sprung from the fiction of travelers that crocodiles shed tears over their prey. The conceit of *crocodiles' tears* (the animals have large lachrymal glands) was common in the sixteenth century. See Spenser's *Faerie Queene*, i, 14-18.

CROCOCITE (from Gk. *κροκοεις, krokoeis*, saffron-colored, from *κρόκος, krokos*, saffron). A lead chromate. It crystallizes in the monoclinic system, has an adamantine to vitreous lustre, and occurs in various shades from a bright hyacinth red to orange yellow. It is found in crystals in quartz veins or in intersecting gneiss or granite and is commonly associated with gold pyrite and other metallic ores. Crocoite occurs in the Urals, Hungary, Brazil, Tasmania, and with wulfenite in Maricopa Co., Ariz.

CROCUS (Lat., from Gk. *κρόκος, krokos*, saffron). A genus of the family Iridaceæ. The species, about 70 in number, have much general similarity and are natives chiefly of the south of Europe and of the East. They set seed, but since the seed pods are underground and are frequently overlooked, and since production of flowers from seed-sown plants is slow, they are chiefly propagated by their corms. Saffron prepared from the stamens of *Crocus sativus* is used medicinally and for dyeing; for the latter purpose, however, aniline colors are replacing it. Some of the species are much cultivated in gardens for the beauty of their flowers, particularly those which, as *Crocus vernus* and *Crocus imperati* and the Dutch hybrids of *Crocus marianus*, flower very early in the spring. The saffron crocus and some other species flower in autumn. The flowers of some species are fragrant. It is necessary frequently to take up crocus roots and plant anew, on account of the manner in which the corms multiply—the new forming in some species above the old, thus, in time, raising the corm to or even above the surface of the ground. When planted in lawns the bulbs must be replaced every two or three years, because they soon become smothered by the grass. The autumn flowering species are seldom cultivated in the United States. See Colored Plate with IRIS. For illustration of *Crocus sativus* see article SAFFRON.

CROCUS OF ANTIMONY, or **CROCUS METALLORUM**. The bright-red antimony oxysulphide that is found native as *kermesite*.

CROCUS OF MARS, or **CROCUS MARTIS**. A polishing substance consisting of finely powdered ferric oxides.

CROESUS, JOHN JAMES ROBERTSON (1834-1906). An American civil engineer, born at Richmond, Va. After graduating in 1853 from the College of St. James (Md.) he served as engineer of the first high masonry dam in the United States at Boyd's Corners, N. Y. (1865-70), as topographical engineer of the New York Park

Department (1872-78), and as chief engineer of the Suburban Rapid Transit Railroad, New York (1885-91). He made several reports on water supply for New York and other cities. In 1903-05 he was consulting engineer of the New York State Health Department. He was treasurer in 1877-87 and president in 1901 of the American Society of Civil Engineers. Besides contributing to other magazines he was editorial writer for the *Sanitary Engineer* (1880-90).

CRÆSUS (Gk. *Κροισος, Kroisos*). A Lydian king of the Mermnadæ line. The son of Alyattes, whom he succeeded, he flourished in the sixth century B.C. He came to the throne about the age of 35 (560 B.C.), and found the wrangling Æolians, Dorians, and Ionians an easy prey, but he did not press his advantage as conqueror beyond the exaction of tribute. Save Lycia and Cilicia, all Asia Minor west of the Halys fell before him. His ability in practical affairs soon made his wealth a proverb. His capital, Sardis, became the brilliant centre of arts and letters, and Cræsus was a munificent patron. Herodotus asserts (i, 29 ff.) that Solon visited his court, and that, when asked by Cræsus whether the possessor of so great riches might not be deemed the happiest of men, he replied in effect that no man can be called happy who is yet alive: to be called happy he must have a fortunate death. When the long peace of the kingdom was evidently about to be disturbed by the encroaching Persians under Cyrus the Great (q.v.), Cræsus formed a league with the Lacedæmonians, and sought the aid also of Nabonidos of Babylon. He tried to propitiate the gods by bestowing rich gifts upon Apollo's shrine, and, encouraged by the oracle's deliverance that he "would destroy a great empire," he determined to take the offensive. With his Lydian forces only, he joined battle with the enemy, but achieved no advantage—a failure which he attributed to the inadequate support of his mercenaries. Returning to Sardis, he called upon the Lacedæmonians for their promised aid and invited the assistance of the Egyptian King, Amasis, meaning to renew the contest early in the next year. Cyrus, however, forced immediate action. Cræsus, almost totally unprepared, was defeated at Thymbra and, after a short siege of Sardis, surrendered his capital. After a reign of 14 years he gave up his crown to the Persian. The oracle spoke truth—he destroyed a great empire, but it was his own. Herodotus further relates that, as the Lydian awaited the fire which, by command of Cyrus, was to consume him, he remembered his conversation with the Athenian philosopher and called out "Solon, Solon, Solon!" Desiring to know the reason of the exclamation, Cyrus heard the story and straightway commanded that the victim be spared. But the fire was by this time blazing vigorously. However, through Apollo's intercession merciful rain fell, and Cræsus was saved from the flames now raging about him. Recently, however, on the basis of a newly discovered poem of Bacchylides (q.v.), iii, 22 ff., it has been held that Cræsus had sought to escape capture by burning himself with his treasures, but that he was unable to effect his purpose. Consult How and Wells, *A Commentary on Herodotus*, vol. i, pp. 99-100 (Oxford, 1912); Jebb, *Bacchylides* (London, 1905). Cræsus, given a residence near Ecbatana, was taken into his

conqueror's favor and later into that of Cambryses. To both monarchs he is said to have rendered valuable service as a counselor, and both he survived. His end is not known.

CROFFUT, WILLIAM AUGUSTUS (1836-1915). An American journalist and author, born at Redding, Conn. During the Civil War he was first a soldier and then a correspondent in the field for the *New York Tribune*. Afterward he became editorially connected with various journals and was executive officer of the United States Geological Survey, whose publications he edited for some time. He is the author of *The War History of Connecticut* (1867); *A Helping Hand for American Homes* (1868); *A Midsummer Lark* (1882); *The Vanderbilts* (1886); *Folk's Nest Door* (1892; 3d ed., 1904); *The Prophecy and Other Poems* (1893); a volume of poems, *Bourbon Ballads* (1880); the opening ode for the World's Columbian Exhibition (1893); *Deseret*, the libretto for the opera by Dudley Buck.

CROFT (AS, small field). A piece of inclosed land, usually connected with a humble kind of dwelling, whose inhabitant, the renter of the land, is called a "crofter." This method of letting small pieces of land, either for tillage or for pasture, is known as "the crofting system." This kind of petty farming was formerly common in Scotland, more particularly in the Highlands. See **CROFTER**.

CROFT, KRÖFT, SIR HERBERT (1751-1816). An English writer. He was educated at University College, Oxford, took orders, and was appointed to the living of Prittlewell, in Essex, which he retained till his death, passing, however, much of his time abroad. He wrote extensively, but is mainly remembered by his "Life" of the poet Young, which he contributed to Johnson's *Lives of the Poets* (1779-81). He succeeded capably in imitating Johnson's style. A novel in letter form called *Love and Madness* (1780) became notorious on account of the insertion of certain letters of Chatterton obtained under false pretense.

CROFT, or CROFTS, WILLIAM (1678-1727). An English musician. He was born at Nether Easington, Warwickshire, and studied music in the choir of the Chapel Royal, then under the direction of Dr. John Blow. He was organist of St. Anne's, Westminster, from 1700 to 1711. In 1707 he was also appointed organist at the Chapel Royal, and it was in this capacity that he produced the beautiful anthems which have perpetuated his fame. In 1724 he published his *Musica Sacra* (2 vols.), containing a collection of 30 anthems and a burial service. According to the preface of the composer, this was the first attempt made in England to print the score of a sacred composition from engravings on plates. Among the best anthems of Dr. Croft are the following: *I will Give Thanks* (1704), for the thanksgiving after the battle of Blenheim; *The Soul of the Righteous* (1714), for Queen Anne's funeral; *The Lord is a Sun and Shield* (1714), for the coronation of George I.; *O Give Thanks* (1715), for the suppression of the rebellion.

CROFT'ANGEY, CHRYSAL. The imaginary editor of Scott's *Chronicles of the Canongate*. He is said to have been intended for Scott's father.

CROFTER. A term designating a class of small tenants of the Scottish Highlands and islands who hold arable land in severalty and

usually certain rights of pasture in common. The crofter is for the most part a descendant of the lowest class under the early clan system; and the rights of common pasturage are traceable to the communal proprietorship of the clan. After the breaking up of the clans the legal status of the crofter became that of a tenant at will; by custom, however, he was usually accorded a certain fixity of tenure.

During the first half of the eighteenth century the chieftain of the clan, while losing his political leadership, came to be regarded as the proprietor of the soil. In some districts the chieftains who had been at war with the royal power were displaced, and the land granted to supporters of the king. In either case the followers of the chieftain became tenants, owing rent for their land instead of personal services and dues, as formerly. Nevertheless, their economic position was fairly satisfactory, especially in the islands. But with the expansion of the woolen industry it became profitable for the landlord to turn his estate into sheep runs; accordingly wholesale evictions of the crofters took place in many of the Highland districts. Moreover, natural increase of population had necessitated a reduction in the size of the individual holdings, so that at the end of the eighteenth century the whole class of crofters had been reduced to a condition of abject poverty. In the early part of the nineteenth century emigration of the crofters to America and the British colonies was officially encouraged; workhouses were established, and extensive measures for relief in time of famine were undertaken; but no permanent improvement was thus secured. In 1883 a parliamentary commission was appointed to investigate the conditions of life of the crofters. As a result of the investigation, the Crofters' Act of 1886 was passed. By this act the crofter is granted permanence of tenure, so long as he does not violate the specified conditions of his tenure: rents are fixed by a commission; compensation is allowed for improvements which the tenant may make, and the tenant has a right to demand the assistance of the landlord in making other permanent improvements. In order to remedy the evil effects of the excessive subdivision of holdings, the crofter is empowered to call upon the landlord to rent him additional land when the original holding is deemed by the commission to be insufficient.

Since the passage of this act the position of the crofter has materially improved. Rents have been lowered; and the crofter, assured that improvements which he may make will not have the effect of raising his rent and will not be taken from him through eviction, has advanced appreciably in methods of agriculture and in industry. See **SCOTLAND, Agriculture**.

Consult: Dalriad, *The Crofter in History* (Edinburgh, 1888); Guernier, *Les crofters écossais* (Paris, 1897); *Crofter Colonization: Eleventh Report of His Majesty's Commission* (London, 1901); "Crofters Past and Present," in *Blackwood's Magazine* (Edinburgh, 1906); *Crofters' Holdings, Scotland, Act* (London, 1907).

CROFTON, FRANCIS BLAKE (1841-1911). A Canadian author. He was born at Crossboyne, County Mayo, Ireland, and was educated at the Royal School, Dungannon, and at Trinity College, Dublin, where he graduated in 1863. He came to Canada and in 1864-65 was pro-

fessor of classics in Bishop's College, Lennoxville, Province of Quebec. For several years afterward he lived in New York City, where he was a contributor to various periodicals. In 1882 he was appointed librarian to the Nova Scotia Legislature, retiring from that position in 1906. He was an ardent advocate of Imperial federation. He published several humorous books, including *The Bewildered Querstists and Other Nonsense* (1875), *The Major's Big Talk Stories* (1881), *The Hairbreadth Escapes of Major Mendax* (1889); also biographical and political studies, as *Haltburton, the Man, the Writer* (1889), *For Closer Union* (1897), *The Imperialism of Haltburton* (1898); *Sombre Tints* (poems), and *Is Suicide Sin?* In 1897 he became a vice president of the International Library Conference, London, England, and in 1901 a vice president of the Canadian Society of Authors.

CROFTS, krŏfts, ERNEST (1847-1911). An English painter, born at Leeds. He studied under A. B. Clav in London, and with E. J. Hunte in Dusseldorf, where he lived for many years. Among his works are: "Cromwell at Marston Moor" (1877); "Napoleon and the Old Guard at Waterloo" (1895); "Funeral of Charles I" (1907, Bristol Museum). They are distinguished for accuracy and truth of detail, but are deficient in action and often merely theatrical in effect. However, Crofts stands among the first of the few English battle painters. He was elected to the Royal Academy in 1896 and named keeper in 1898.

CROGHAN, krŏ'gan, GEORGE (1791-1849). An American soldier, born near Louisville, Ky. He graduated at William and Mary College in 1810, entered the army in 1812, distinguished himself under General Harrison at Fort Meigs, and on Aug. 1-2, 1813, defended Fort Stephenson (on the present site of Fremont, Ohio) against the attack of a greatly superior force of British and Indians, for which he received the thanks of Congress and a gold medal. In 1814 he was promoted to be lieutenant colonel, but resigned in 1817 and was appointed postmaster at New Orleans in 1824. He became inspector general with the rank of colonel in 1825, joined General Taylor's forces in Mexico in 1846, and took part in the battle of Monterey.

CROISSET, krwā'zā', MARIE JOSEPH ALFRED (1845-). A French classical philologist, born in Paris. He was appointed professor of Greek at the Faculté des Lettres in 1885 and became a member of the Academy of Inscriptions in the following year. He is the editor of various Greek authors and wrote: *De Personis apud Aristophanem* (1873), *Xenophon, son caractère et son talent* (1873); *La poésie de Pindare et les lois du lyrisme grec* (1880); and, in conjunction with Maurice Croiset, *Histoire de la littérature grecque* (5 vols., 1887-99; new ed., 1913), an admirable work. An excellent abridgment of the last-named work, entitled *Manuel d'histoire de la littérature grecque*, appeared in 1901 (Paris; new ed., 1913). With J. Petitjean he wrote *Grammaire grecque* (3d ed., Paris, 1896).

CROISSET, MAURICE (1846-). A French classical philologist, brother of the preceding, born in Paris. He became professor of the Greek language and literature at Montpellier in 1876, and professor of the Greek language and literature at the Collège de France in 1893. He is the author of *De Publica Eloquentia Prin-*

cipis apud Græcos in Homericis Carminibus (1874); *Des idées morales dans l'éloquence politique de Démosthène* (1874); *Essai sur la vie et sur les œuvres de Lucien* (1882); *Aristophanes and the Political Parties at Athens* (Eng. trans. by James Loeb, London, 1909), and, in conjunction with Alfred Croiset, *Histoire de la littérature grecque*, 5 vols., and *Manuel d'histoire de la littérature grecque*.

CROIX, krwā', CARLOS FRANCISCO DE, MARQUÉS DE CROIX (1699-1786). A Spanish general and administrator. He was born at Lille, French Flanders, and after serving in the Spanish army was appointed commandant at Ceuta, whence he was transferred in the same capacity to Puerto de Santa María. He afterward became captain general of Galicia and was Viceroy of New Spain (Mexico) from 1766 to 1771. He was distinguished by strict integrity and high administrative ability. During the last 15 years of his life he was Viceroy and captain general of Valencia.

CROIX, CHARLES DE. See CLERFATT.

CROIX, TEODORO DE, CABALLERO DE CROIX (c.1730-91). A Spanish soldier. He was born at Lille, French Flanders, and was a brother of the Viceroy of New Spain (Mexico). In 1777 he was appointed Governor of the newly established district known as the "Interior Provinces" of the country and of Sonora, and served in this capacity until 1784. During his brief term as Viceroy of Peru (1784-90) he did much to ameliorate the condition of the Indians and enacted several laws for their protection. He died soon after his return to Madrid.

CROIZETTE, krwā'zēt', SOPHIE (1848-1901). A French actress. She was born in St. Petersburg. After two years at the Conservatory she obtained the first prize for comedy. In 1869 she appeared at the Théâtre Français as Queen Anne in *Un verre d'eau* and four years afterward was made a "sociétaire." Mademoiselle Croizette rarely appeared in classic rôles. Her best work was in the *Sphinx* (Octave Feuillet), *L'Étrangère* (Dumas fils), *Fourchambault* (Émile Augier), and *La princesse de Bagdad* (Dumas fils), her last and greatest creation. She married and retired from the stage in 1885.

CROKER, B. M. An English novelist. She was a daughter of William Sheppard, rector of Kilgefin, Roscommon, Ireland, was educated in England; married John Croker, of the Royal Munster Fusiliers, and traveled extensively in India and other parts of the East. Mrs. Croker wrote some good Irish peasant stories, as *Terence* (1899), and excels in depicting Anglo-Indian life, particularly the fashionable feminine world. The scenes of *Jason and Other Stories* (1899), comedy running into farce, are laid in India, Australia, and England. Her novels are commonly translated into French and German. Besides those above may be cited: *Proper Pride* (1882); *Pretty Miss Neville* (1883); *Village Tales and Jungle Tragedies* (1894); *In the Kingdom of Kerry* (1896); *Beyond the Pale* (1897); *A State Secret* (1901); *Angel* (1901). *Johanna* (1903); *Nine Days' Wonder* (1905); *Old Cantonment* (1905); *Serpent's Tooth* (1913).

CROKER, JOHN WILSON (1780-1857). An English writer and politician. He was born at Galway, Ireland. Educated at Trinity College, Dublin, he entered Lincoln's Inn as a student in 1800 and two years later was called to the Irish bar. In 1804 he published *Familiar Epistles*, a

clever satire in verse on the Irish stage, and *An Intercepted Letter from Canton*, a satire in prose on Dublin society. Both ran through several editions. In 1808 he issued a treatise on the *State of Ireland, Past and Present*—a pamphlet on Catholic emancipation—which brought him to the notice of politicians, and in the same year he was elected member of Parliament for Downpatrick. A warm defense in Parliament, in 1809, of the Duke of York, charged with corrupt administration, helped Croker in the same year to the office of Secretary to the Admiralty, a post which he held for more than 20 years. He was one of the founders of the *Quarterly Review* and contributed many violent party articles to its pages, as well as a large number of personal and abusive reviews, one of the most famous being on Keats's *Endymion*. As Rigby he was caricatured by Disraeli in *Coningsby*. In Parliament he steadily opposed the Reform Bill in all its stages, and after its enactment he refused to enter Parliament again. He took an active part in the establishment of the Athenaeum Club and rendered good service to literature by his annotated edition of Boswell's *Johnson* (1831), famous for Macaulay's savage review of it, and by his publication of the *Suffolk Papers* (1823) and Lord Hervey's *Memoirs of the Court of George II* (1848). His *Stories from the History of England for Children* (1817) supplied Scott with the idea of *Tales of a Grandfather*. He also continued for a time to write verse. His *Battle of Talavera* (1809) pleased Wellington and was praised by Scott. Consult Jennings, *Diaries and Correspondence of Croker* (London, 1884).

CROKER, RICHARD (1843–). An American politician, well known as a leader of Tammany Hall in New York City. He was born at Black Rock, Ireland, but when two years of age was taken by his parents to America, and for a short time attended the public schools in New York City. He was then for seven years employed as a machinist, became prominent in the New York volunteer fire department, and took an active interest in local politics, and about 1865 identified himself with the Tammany Hall organization. From 1868 to 1870 he served as an alderman; was reelected in 1872, but was forced out of office by Tweed, and acted for several months, on Mayor Havemeyer's appointment, as city marshal, his special duty being the collection of arrears in taxes. He was elected city coroner in 1873 and again in 1876, was appointed fire commissioner in 1883, and was reappointed to that position by Mayor Abram S. Hewitt in 1887. In 1886, on the death of John Kelly (q.v.), he became chairman of the finance committee of that organization and its recognized leader. From April, 1889, to February, 1890, he was city chamberlain. He conducted the successful mayoralty campaigns of Hugh Grant, Thomas F. Gilroy, and Robert A. Van Wyck in 1889, 1893, and 1897 respectively, and during the presidential campaign of 1900 supported W. J. Bryan. In 1902, soon after the election of Seth Low to the mayoralty, he resigned as leader of Tammany Hall, and the following year went to England, and later to Ireland. In 1907 he won the Derby with his race horse Orby. Consult Lewis, *Richard Croker* (New York, 1901).

CROKER, THOMAS CROFTON (1798–1854). An Irish author and antiquarian. He was born

in Cork, Jan. 15, 1798. He early devoted himself to the collection of legends and songs of the Irish peasantry; and in 1824 he published his *Researches in the South of Ireland*, characterized by a happy blending of humor and sentiment with archaeological learning. The work was followed by the *Fairy Legends and Traditions of the South of Ireland* (1825), trans. into German by Grimm (1826); *Legends of the Lakes* (1829); *Popular Songs of Ireland* (1839). Croker also edited *Memoirs of Joseph Holt, General of the Irish Rebels*, wrote two novels, and contributed to the magazines. He devoted much time to archaeology, being member of many antiquarian societies. Through the influence of John Wilson Croker, a friend but no relative, he obtained at the age of 20 a clerkship in the Admiralty, a position which he held till 1850. He died Aug. 8, 1854. Consult "Life," by his son, prefixed to *Fairy Legends* (London, 1859), and "Memoir of T. C. Croker" in the introduction of his *Walk from London to Fulham* (ib., 1860). The *Popular Songs* were edited by Morley (ib., 1886). Other works that deserve to be mentioned are: *Adventures of Barney Mahoney* (2d ed., 1832); *Historical Songs of Ireland* (1841), relating especially to the revolutionary struggle between James II and William III, *The Keen of the South of Ireland* (1844), which illustrates Irish political and domestic history, manners, music, and superstitions; *Narratives Illustrative of the Customs in Ireland in 1641 and 1690* (1841); and *Britannia's Pastorals* (with W. Browne, 1852).

CROLL, KRÖL, JAMES (1821–90). A Scottish geologist. He was born at Whitefield, Perthshire, and received only the usual brief schooling of a peasant's son. He studied philosophy and physical science and published a treatise on the *Physical Cause of the Change of Climate during the Glacial Period* (1864). He was appointed an officer of the geological survey of Scotland and in that post (1867–81) prosecuted researches which resulted in works including the treatise on *Climate and Time in their Geological Relations* (1875), in which he ascribed climatic changes during geological epochs to secular variations in the eccentricity of the earth's orbit, and *Climate and Cosmology* (1885), containing a discussion of the origin of the sun's heat and the probable development of the nebulae and stars. Though considerable difference of opinion exists as to the real value of these views in relation to the establishment of a sound geological theory, there is general recognition of the value of his works as stimulating and directing inquiry. In his later life he returned to the field of philosophical speculation and published *The Philosophic Basis of Evolution* (1890), in which he discusses the fundamental principles underlying the doctrine of evolution. Consult *Autobiographical Sketch of James Croll, with Memoir of his Life and Work*, by J. C. Irons (London, 1896).

CROLY, DAVID GOODMAN (1829–89). An American journalist, born in New York and educated at the New York University. He was associated with the *Evening Post* and the *New York Herald* (1854–58) and then became city editor and subsequently managing editor of the *New York World*. In 1872 he predicted the panic of 1873 and the failures of Jay Cooke & Co. and the Northern Pacific Railroad. From 1872 to 1878 he was editor of the *Daily Graphic*.

He married "Jennie June" (see CROLY, JANE CUNNINGHAM). His published works include *Seymour and Blair: Their Lives and Services*, with an appendix containing a *History of Reconstruction* (1868), and a *Primer of Positivism* (1876).

CROLY, GEORGE (1780-1860). An Irish author and clergyman. He was born in Dublin and was educated at Trinity College there. In 1810 he was ordained a priest of the English church, and in 1845 became rector of St. Stephen's, Walbrook, London. His first work was a poem, entitled *Paris in 1815*, which appeared in 1817. From this time up to within a short period from his death he wrote almost incessantly as dramatic critic of the *New Times*, as a contributor to *Blackwood's* and the *Literary Gazette*, and as the author of numerous satires, romances, and biographies. Among his works are: *The Angel of the World* (1820); *Tales of St. Bernard* (1829); the novel *Marston* (1846); and the poem *The Modern Orlando* (1846). He was an imitator of the grandiose style of Byron and Moore, yet *Salathiel* (1829), his chief publication, contains many effective scenes and is still good reading. It was reprinted in New York in 1901 as *Tarry Thou till I Come*.

CROLY, JANE CUNNINGHAM (1831-1901). An American author and journalist, better known as JENNIE JUNE. She was born in England, came to the United States when a girl, and at an early age became a contributor to newspapers and magazines. She called the first congresses of women in the United States in 1856 and 1860, organized Sorosis in 1868, founded the New York Woman's Press Club in 1889, and in 1892 became professor of journalism and literature in the Rutgers Women's College. She was married to David G. Croly in 1856. Her works include: *For Better or Worse* (1875), *Jennie Juneana: Talks on Women's Topics* (1864); *Cookery-Book for Young Housekeepers* (1866); *Knitting and Crochet* (1885); *Thrift on her Own Resources* (1891); *History of the Woman's-Club Movement in America* (1898 and 1900). She was the editor of *Demorest's Magazine* from 1860 to 1887, and later was editor of the *Cycle* (which she founded) and the *Home-Maker*. Consult *Memories of Jane Cunningham Croly, "Jennie June"* (New York, 1904).

CRO-MAGNON, króm'nyôns'. A type of mankind supposed to have inhabited southwestern Europe at the end of the Magdalenian epoch, at the close of the Pleistocene. They were marked by the most dolichocephalic of crania, elongated at the back (index, 63-74.8), with low face and orbits, but by good stature. In 1858 workmen unearthed, in the cave called "Cro-Magnon" near Les Eyzies, in the Department of Dordogne, France, imperfect skeletons of three men, two women, and a child. A peasant found a human bone in a rabbit hole, and at the Cave of Aurignac the remains of 17 persons were recovered. At Laugerie Basse, in the Vézère valley, another discovery was made. In the Cave of Baumes Chaudes, in Lozère, 35 crania were collected, all of this long, low-faced type. To this type, wherever found, the name of Cro-Magnon is given. Consult: Mortillet, *Le préhistorique* (Paris, 1882); Deniker, *Races of Man* (London, 1900); Ripley, *The Races of Europe* (New York, 1899); and, for critical observations, Sergi, *The Mediterranean Race* (London, 1901); Obermaier, *Der Mensch der*

Vorzeit (1912); Keith, *Ancient Types of Man* (1912). See MAN.

CROMARTY FIRTH, króm'är-ti fërth (from Gael. *crom*, OIr. *cromb*, Welsh *orion*, Bret. *crom*, crooked + OIr. art. Gall. *artos*, stone, and *firth*, *firth*, from Icel. *fjörðr*, ford; ultimately connected with Lat. *portus*, port, Skt. *par*, to cross). A landlocked inlet of the North Sea, on the northeast coast of Scotland, just northwest of the Moray Firth, 18 miles long, 3 to 5 miles broad, and 5 to 35 fathoms deep (Map: Scotland, D 2). The entrance is between the North and South Soutars, two high wooded headlands, and is 1½ miles across, with 12 to 30 fathoms of water, and with the Three Kings Reef about half a mile off land. Near the firth are the towns of Dingwall, Invergordon, and Cromarty. In the red sandstone, near the entrance, Hugh Miller discovered the fossil fishes *Pterichthys*, *Osteolepis*, etc.

CROMARTYSHIRE. See ROSS AND CROMARTY.

CROMDALE (from Gael. *crom*, crooked + Eng. *dale*). A village in Inverness-shire, Scotland, on the east bank of the Spey. It was the scene of a battle fought May 1, 1690, between the Scottish Jacobites and 800 of William III's troops, in which the latter were victorious. The event is celebrated in a song entitled "The Haughs of Cromdale."

CROME, JOHN (1768-1821). An eminent English landscape painter and etcher, founder of the Norwich school. He is usually called "Old Crome," to distinguish him from his son of the same name. Born on Dec. 22, 1768, he passed his youth in humble circumstances, acquiring his taste for painting during an apprenticeship to a sign painter. Together with Robert Ladbroke, a printer's apprentice, he rented a garret and started upon his career as a painter. The two artists spent their leisure time sketching in the field, endeavoring to reproduce nature exactly. Crome's pictures thus became "exact views" of the places he loved. His technique is reminiscent of the Dutch masters, whom he studied in the houses of the Norfolk gentry, in his capacity as a drawing teacher, and in a visit to Paris. Hobbema, in especial, was his favorite master; but the foundation of Crome's art was a genuine English realism, and his pictures combine great breadth with delicacy of color and lightness of brushwork, and although they are occasionally marred by overattention to detail, they always contain a true feeling for light and air. He painted trees with great force and individuality. His "Oak at Poringlam," in the National Gallery, and the "Willow" are highest masterpieces of their kind. His works are mostly in private possession, especially among the gentry of Norfolk. The National Gallery contains three good examples, "Household Heath" and "Chapel Fields, Norwich," besides the one already mentioned. In the Metropolitan Museum of Art, New York, are two good examples, "Haut-bois Common" and "The Old Oak." His favorite subjects were taken from the scenery about his native home, but he was capable of adapting himself to the livelier tones of French landscape, as is indicated in his "Fishmarket at Boulogne" and his "Boulevard des Italiens, Paris," both in Keswick Hall near Norwich. Although he followed etching as a pastime only, he was an excellent etcher, working with great care and detail, though sometimes not

achieving tone and atmosphere. His etchings were published after his death, in 1834, under the title of *Norfolk Picturesque Scenery* and again in 1838 and 1850. Crome seldom exhibited in London, but he displayed at different times no less than 288 pictures in the Norwich Society of Artists. This society he himself founded in 1803, becoming its president in 1808. He died, April 22, 1821, at Norwich, where nearly all of his life had been passed. Consult his biography by Turner (Norwich, 1838), Wodderspoon (ib., 1858), and Hardie, in the *Connoisseur* (London, 1904); also Van Dyck, *Old English Masters* (New York, 1902); Dickes, *The Norwich School of Painting* (London, 1905); Binyon, *J. Crome and J. S. Cootman* (ib., 1906); Theobald, *John Crome's Etchings* (ib., 1906).

CROME, JOHN BERNY (1794-1842). An English landscape painter, son and pupil of John Crome, usually called "Young Crome." He was born in Norwich and was appointed president of the Norwich Society of Artists in 1819. He painted usually coast and river scenes of England, France, Holland, and Italy, and his best pictures are so like those of his father that his "Yarmouth Water Frolic" (1821) was long considered Old Crome's masterpiece. Towards the end of his life his art degenerated, and he produced little besides potboilers, including many moonlight effects. Consult W. F. Dickes, *The Norwich School of Painting* (London, 1905).

CROMER. A seaport and watering place on the north coast of Norfolk, England, 21 miles north of Norwich (Map: England, H 4). It stands on the top of one of the highest cliffs on the coast. Nearly all the old town, called "Shipden," with one of the churches, was swept away by the sea about the year 1500. As the sea is encroaching on the land, vessels have to load and unload on the open beach. In 1825 some cliffs 200 feet high fell into the sea. Seamen call Cromer Bay the Devil's Throat, from its dangers to navigation. There is an excellent golf course in the neighborhood. Pop., 1901, 3781; 1911, 4073.

CROMER, EVELYN BARING, first EARL (1841-). An English diplomatist and administrator, born at Cromer Hall, Norfolk, and educated at Woolwich Academy. After a brilliant career in the Royal Artillery, he was private secretary to the Earl of Northbrook, Governor-General of India, from 1872 to 1876; was Commissioner on the Egyptian public debt from 1877 to 1879, was Controllor General of Egyptian finances from 1879 to 1880; was Finance Minister of India from 1880 to 1883, when he became Consul General and Agent in Egypt. He was created first Baron Cromer in 1892, Viscount in 1898, and Earl in 1901. He became virtually British Viceroy of Egypt, and his efficient administration won for him the appellation of "Maker of Modern Egypt." He rescued it from bankruptcy, replaced corrupt administrators by honest officials, reduced taxes, reformed the army, increased trade, and greatly extended railway, postal, and telegraph facilities. He resigned in 1907 and returned to England, where in 1911 he was active in securing Unionist votes for the passage of the Parliament Bill, so as to prevent the creation of new peers. He wrote *Modern Egypt* (1908) and *Ancient and Modern Imperialism* (1910).

CROMER, MARTIN (1512-89). A Polish historian and geographer, born at Biecz, near

Cracow, and educated at the academy in that city. He was secretary to the eldest son of King Sigismund I and was intrusted with diplomatic missions to Pope Paul V and to the emperors Charles V and Ferdinand I. In 1578 he was appointed Bishop of Ermeland. His history of Poland, from its beginning to the year 1506, *De Origine et Rebus Gestis Polonorum* (1555; frequently reprinted), is a valuable source of information on this subject. Another important work is the geographical and statistical publication *Polonia* (in Latin, 1586; Ger. trans., 1741).

CROMLECH, króm'lek. See **DOLMEN**.

CROMPTON. A town in Lancashire, England, 3 miles northeast of Oldham, and 11 miles northeast of Manchester. It has important cotton manufactures and collieries. Pop., 1901, 13,427; 1911, 14,750.

CROMPTON, SAMUEL (1753-1827). An English inventor, whose spinning mule revolutionized the cotton-weaving industry. In his youth he was largely occupied with weaving at home, and it was the dissatisfaction caused by the machine he used that led to the perfection of his invention in 1779. Unable to bear the expense of taking out a patent, he exploited his machine by private arrangement with manufacturers, some of whom later denied their obligations to him, so that for his valuable invention he received less than £70. In 1812, after much labor, he secured from the House of Commons a grant of £5000, the only official recognition bestowed upon him. Consult French, *Life and Times of Crompton* (London, 1860).

CROMPTON'S SPINNER. See **SPINNING**.

CROMWELL. A dramatic work by Victor Hugo (1827). It was not intended for the stage. The preface to its first edition has since become famous as containing the breviary of French dramatic "Romanticism."

CROMWELL, BARTLETT JEFFERSON (1840-). An American naval officer, born near Springplace, Ga. He attended the Naval Academy (1857-60). During the Civil War he served in the South Atlantic blockading and Eastern Gulf squadrons, and rose to the rank of lieutenant commander. He was promoted commander in 1874, and as such was intrusted with the navigation of the flagship *Ticonderoga* during Admiral Schufeldt's voyage around the world in 1879-81. He thereafter successively became captain in 1880, commodore in 1898, and rear admiral in 1899. After the liberation of Cuba from Spain Cromwell was ordered to take charge of the naval station at Havana. In 1901 he was appointed to the command of the United States fleet in South American waters. In addition to his service at sea, Cromwell was inspector of ordnance at the Philadelphia navy yard (1874-78), at the Portsmouth navy yard (1882-84), and captain of the Norfolk navy yard (1891-94). He retired in 1902.

CROMWELL, HENRY (1628-74). The fourth son of Oliver Cromwell. At the age of 16 he served as a soldier in the Parliamentary army. In the Barebones Parliament he was one of the six Irish members. In 1655 he went to Ireland as a major general, and was appointed Lord Lieutenant in 1657. His rule was popular, and his moderation to Royalists received the approval of Charles II, who at the Restoration confirmed his Irish estates under the Act of Settlement. His later years were passed as

a farmer on his estate, Spenway Abbey, in Cambridgeshire. He died March 23, 1674. His great-grandson, the last representative of the house of Cromwell, died in 1821.

CROMWELL, OLIVER (1599-1658). Lord Protector of England. He was born at Huntingdon, April 25, 1599, and was the only surviving son and heir of Robert Cromwell and Elizabeth, daughter of William Steward, whose family, tradition notwithstanding, has no connection with the royal house of Stuart. The Cromwell family sprang from Katherine, who was the sister of Thomas Cromwell, the Hammer of the Monks, and who married Morgan Williams, a Welsh brewer of means. Their son Richard took the surname Cromwell and, profiting by his uncle's influence, rose to wealth and honor in the service of Henry VIII, retaining his sovereign's favor even after his uncle's fall in 1540. The family continued to be prominent from that time and was noted for its lavish entertainment of royalty, but, owing to the extravagance of Oliver's uncle of the same name, the fortunes of the family had been squandered, and in 1627 the family seat at Hinchinbrook was sold to Sir Sidney Montague. Oliver's father was the second son of Henry, the Golden Knight, and the grandson of Richard (Williams) Cromwell, and he therefore represents a younger branch of the family, whose income was never large.

Little is known of Cromwell's early life. He was educated at the free school of Huntingdon under Dr. Thomas Beard, an austere Puritan. In 1616 he entered Sidney Sussex College at Cambridge, a stronghold of Puritanism, but soon withdrew, probably owing to his father's death, in 1617. There is no foundation for the reports by royalist biographers of wildness and profligacy in his early years, though he was boisterous and only moderately successful at his studies. He probably studied law for a short time at Lincoln's Inn. In 1620 he married Elizabeth Bourchier, daughter of a London merchant, and she seems to have brought him a considerable dowry. The few glimpses that we have of his life before the beginning of his active public career, which may be said to date from the meeting of the Long Parliament in 1640, leave no doubt as to which side he would espouse in the approaching struggle. For some years he was in the throes of a religious conflict, from which he emerged in a triumphant conversion. Throughout the rest of his life he was deeply religious, an ardent though tolerant Puritan. The earliest letter from his pen which has come down to us (1636) is a solicitation for a subscription to maintain a lectureship, by which means the Puritans supported preachers, owing to the neglect of this function by the established clergy. He was elected to the Parliament of 1629, where his only recorded speech is directed against the opponents of Puritanism. He watched the career of Gustavus Adolphus with eager sympathy, and it is thought that his own early military successes were in part a result of his careful study of Gustavus Adolphus' campaigns. He took less interest in purely political matters, but we know of three instances where he championed the poorer inhabitants of his districts whose rights of pasturage were threatened. He was fined £10 in 1630 for having neglected to be knighted, but we have no record of his having resisted the forced loan or the payment of ship money. Yet there can be no doubt that he was dissatisfied

with Charles's arbitrary rule, and there is a tradition which corresponds well with circumstances, that he once intended to emigrate to New England. If this is true, it was probably between 1631 and 1636, and it may have been prevented by a legacy which fell to him in the latter year. He was elected to the Short Parliament in 1640 and to the Long Parliament in the same year.

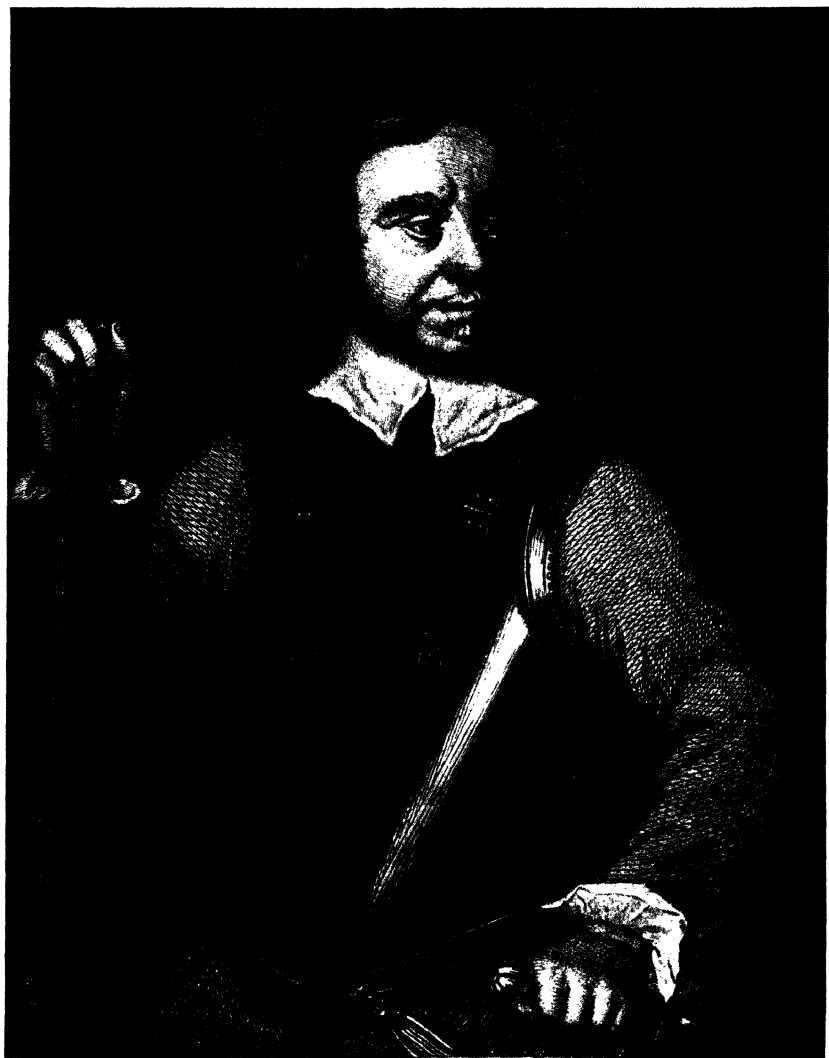
Cromwell played a subordinate part in the deliberations of the Long Parliament. He had no share in the impeachment of Strafford. He was rather more interested in the constitutional reforms, but most of all in ecclesiastical matters, and joined Sir Henry Vane and Hampden in demanding the abolition of the episcopacy, "root and branch." On the outbreak of the Irish insurrection of 1641 it was he who proposed that Parliament should assume control of the militia. When the Civil War broke out in 1642, he was very active in securing the authority of Parliament in the eastern counties and commanded a troop of horse in the battle of Edgehill, Oct. 23, 1642. In 1643 the war everywhere went against Parliament except in the Eastern Association, where Cromwell not only kept the Royalists at bay, but even gained ground. His one troop had grown to 10, and afterward grew to 14, forming two regiments of the best-drilled cavalry in England. For his services in the Eastern Association Parliament made him lieutenant general of the army of the Eastern Association (1644), and appointed him a member of the committee of both kingdoms. In the battle of Marston Moor, July 2, 1644, he commanded the Parliamentary horse, whose final charge decided the fortunes of the day. Hitherto the Parliamentarians had been inferior in cavalry, whose military importance was greater in those days than now. It was due to Cromwell that this inferiority was overcome. It is at about this time that the division of the Puritans into two parties clearly appears. The Presbyterians, who were largely in the majority in Parliament, were alarmed at the growth of religious sects in the army, and they were anxious for an accommodation with Charles in order to be free to suppress Independency. The army, on the other hand, had become the stronghold of Independency and desired religious toleration and a vigorous prosecution of the war. Cromwell was the spokesman of the party of toleration. He impeached Manchester for half-heartedness in the prosecution of the campaign and found support with the Commons, but not with the Lords. He then disinterestedly proposed the reorganization of the army under new leaders, and on the adoption of the New Model (q.v.), and the Self-Denying Ordinance (q.v.), assumed that his military career was over. On the contrary, he was appointed lieutenant general in command of the cavalry, and by a charge of the Parliamentary horse decided the day at Naseby, the last battle of the First Civil War, June 14, 1645. The distrust between the Presbyterian Parliament and the Independent army became an open breach when the Parliament not only proposed to disband the army without paying the arrears due to the men, but made overtures to Charles which seemed to the army a surrender of what they had been fighting for. Cromwell, now the recognized leader of the army, hesitated, as was his wont, and tried to mediate between the two parties,

but in the end threw in his lot with the army. It was he who ordered the abduction of the King from Holmby. In the Second Civil War, a consequence of this rupture, in which the King played off one party against the other, Cromwell defeated the Scots under Hamilton, who were over twice his number, in a remarkable three days' battle near Preston, Aug. 17-19, 1648. The army now clamored for the life of the King, whose duplicity had caused the renewal of the war. For a time Cromwell held back, but when his mind was once made up no legal technicality could stop him. "I tell you we will cut off his head with his crown upon it," he cried roughly, in answer to an argument denying the jurisdiction of the High Court of Justice. He had nothing to do with Pride's Purge, being absent at the time, but he accepted the result of it, and was foremost in all the events leading up to the King's execution (Jan. 30, 1649).

On the abolition of the monarchy the position of the Commonwealth was extremely perilous. It was torn asunder by partisan strife, and it was without a friend in Europe. Scotland, alienated by the execution of the King and hostile to the dominant Independent and Military party, proclaimed Charles II King, not only of Scotland, but of England and Ireland as well. Ireland demanded immediate attention, for the Second Civil War had its counterpart there, and a coalition of the various parties had all but driven the Parliamentary forces out of the island. Cromwell accepted the command of the forces destined for its reconquest on March 30, 1649, and landed at Dublin, August 15, with three regiments. At Drogheda, "being in the heat of action," he ordered the famous massacre of the garrison of 2800 men, which had refused to capitulate (September). This was in accordance with the strict rules of war of the time, though it had not been put into practice in England. Cromwell explained that it was a just punishment for the outrages of 1641, which he looked upon as entirely wanton and without provocation. The immediate military effect of the massacre was advantageous, since for a time town after town surrendered with little resistance, but its unfortunate political effect lasts until the present day. At Wexford there was another massacre, though not by Cromwell's order. In May, 1650, the resistance was so nearly broken that Cromwell left the completion of the conquest to his successors, Ireton and Ludlow, and hastened back to confront the danger from the side of Scotland. He swept away with impatience Fairfax's legal objection that the Scots had a right to choose their own King, for he saw clearly that England must either coerce the Scots or be coerced by them. He defeated one Scottish army at Dunbar, Sept. 3, 1650, and another, commanded by Charles II in person, exactly one year later at Worcester. While he had to be on his guard from this time forth against plots and uprisings, Worcester marks the end of armed resistance to the Republic. He brought Scotland and Ireland (or the Protestant part of Ireland) into legislative union with England, the first union of the three kingdoms, and gave them free trade and a better administration of justice, but the taxes to support the English garrisons were heavy. In addition, Ireland groaned under the attempt to transplant her Catholic population, or, as the

plan was afterward modified, her Catholic landowners, to the wilds of Connaught in order to make way for English settlers. Cromwell's treatment of Ireland was pitifully harsh, but it was caused principally by his complete ignorance of Irish affairs, though his ignorance was not greater than that of his countrymen.

The problem which now confronted the leaders of the Commonwealth was the substitution of a permanent constitutional government in the place of the provisional Rump. The withdrawal of the Cavalier party on the outbreak of the Civil War, and the expulsion of the Presbyterian members in the Pride's Purge, had left only 60 or 70 members in habitual attendance in Parliament, whose power depended solely upon the support of the victorious army. Not only had they made themselves very unpopular by their harsh measures, but they refused to give way to a newly elected and more truly representative Parliament which the army desired, unless they were made members of the new Parliament without election, and clothed with power to exclude undesirable new members, especially those of Royalist sympathies. In the course of the prolonged dispute they were guilty of what Cromwell considered a breach of good faith, whereupon he angrily expelled them on April 20, 1653, to the great satisfaction of the English nation. But with them went the last vestige of civil authority in the land, and England was left face to face with the army—a state of affairs which, in view of the well-known English detestation of military rule, could not long endure. Under the influence of Harrison and the extreme Puritans he called on the various Congregational churches to nominate members for a Parliament, which resulted in the Nominated or Barebone's Parliament (q.v.) of 149 members (of whom four represented Scotland and six Ireland). This Parliament soon showed such a readiness to adopt radical and impossible measures, and was so torn asunder by party strife, that when the Moderates rose, early on the morning of Dec. 12, 1653, and voted its dissolution, Cromwell was greatly relieved, though he had no previous knowledge of the conspiracy. The officers thereupon adopted a written constitution, called the *Instrument of Government* (q.v.), which is of great interest from the point of view of constitutional history, under which Cromwell, on December 16, assumed the title of Protector. An elected Parliament of one House was provided for, whose powers were defined by the Instrument. The first Parliament which met under its provisions, on Sept. 3, 1654, is of great importance to a correct understanding of the Protector's treatment of his parliaments. He invited a revision of the Instrument, but in the debates on it the Parliament showed signs of making itself perpetual, of taking away liberty of conscience, and of reducing both the army and the Protector to its exclusive control, thus breaking down the balance of power between the Protector and Parliament which the Instrument had sought to establish. Cromwell interfered by force and excluded from the House all who refused to sign an agreement not to alter the Instrument in these "four fundamentals." This incident is crucial in the appreciation of Cromwell's parliamentary difficulty. The leaders of the popular party failed to understand that government by consent of



OLIVER CROMWELL
FROM AN ENGRAVING BY JAMES CALDWELL AFTER A PAINTING BY ROBERT WALKER

the people meant the return of the Stuarts and that the sole salvation of the Commonwealth lay in a strong executive backed by the army. Furthermore, his demands were moderate, for, says Mr. Gardiner, "his four fundamentals have been accepted by the nation and are at this day as firmly rooted in its conscience as parliamentary supremacy itself." Cromwell dissolved the Parliament without coming to an agreement with it and without receiving the necessary supplies. In the year following, Penruddock's rising drove the Protector to acts as illegal as any of which Charles I had been guilty. He divided England into 10 military districts, over which he placed major generals, with extensive police powers backed by military force, the estates of Royalists being taxed by his own arbitrary power to support the scheme. It was a success as a police measure, but the nation groaned when Cromwell used this method to enforce a stricter standard of Puritan morality than the people were ready to accept. The foreign wars made new supplies necessary, and in 1656 the Protector called his last Parliament, from which his council first excluded 100 undesirable members. Upon the discovery of a plot against the Protector's life, Parliament drew up a new constitution called the *Humble Petition and Advice*, providing for an Upper House and offering Cromwell the title of King. Cromwell hesitated for some weeks, but, finding the title unpopular with the army, he at last declined it. The *Petition and Advice* was then passed with the title Protector substituted for that of King, and was adopted in place of the *Instrument of Government*. Upon the second session of the Parliament in January, 1658, it was found that the promotion of Cromwell's supporters to the Upper House had given the Republicans a majority in the Lower House. They not only insisted upon revising the constitution anew, but were forming con-piracies of a dangerous sort whereupon Cromwell dissolved them, February 4. He had failed to transform the military into a civil state.

The vigor with which Cromwell conducted England's foreign affairs has been much admired. He had little to do with the Dutch War, which he disliked as a war against a Protestant power. This he brought to a successful conclusion, April 5, 1654. The two leading nations of Europe were at war and bidding for his alliance. He was at first inclined to favor Spain, partly from his sympathy for the French Huguenots and partly because France supported Henrietta Maria and the Stuart cause. Spain, however, had prohibited English ships from sailing in West Indian waters, even though bound for an English colony. In December, 1654, Cromwell sent out a badly equipped expedition under Penn and Venables, which suffered a disastrous repulse in an attack against Santo Domingo, but seized Jamaica, whose importance was little appreciated at that time. This attack naturally precipitated a war with Spain in Europe in which Blake, having previously brought the Bey of Tunis to terms (April 4, 1655), destroyed one Spanish treasure fleet at sea (Sept. 8, 1656) and sank another in the harbor of Cadiz (April 20, 1657). Two treaties were signed with France—the first on Oct. 24, 1655, providing for the expulsion of the Stuarts from French territory; the second on March 23, 1657, providing for a joint attack upon the Spanish

Netherlands, in which the English greatly distinguished themselves before Dunkirk, in the battle of the Dunes, June, 1658, and secured Mardick and Dunkirk as their share of the spoils. But while Cromwell succeeded by force of arms in making England universally feared, he was very ignorant of European politics and his aims were faulty. He was completely under the illusion that the Catholic powers were on the point of combining to crush Protestantism, and he was constantly negotiating with Charles X of Sweden, whom he erroneously regarded as a second Gustavus Adolphus, to form a counter Protestant league, not knowing that it was impossible to reconcile, for religious purposes, either Sweden and Holland on the one hand, or France and Spain on the other. Moreover, in allying with France against Spain he did much to prepare the way for Louis XIV and the period of French aggression in Europe. Nor should it be forgotten that his foreign enterprises greatly increased the burdens of a heavy taxation which alienated the people of England from his rule. He died on Sept. 3, 1658.

In 1899 Parliament erected a statue to Cromwell in Westminster, facing Whitehall. The debates which the erection of this tardy memorial to the great Puritan leader occasioned in Parliament show how vital to many Englishmen are, even yet, the principles for which their forefathers struggled in the period of the Great Civil War.

Bibliography. The chief source of information in forming an estimate of Cromwell's character will always be his own words, first collected by Carlyle, *Letters and Speeches of Oliver Cromwell* (London, 1845). The speeches are to be found in Stainer, *Speeches of Oliver Cromwell, 1644-58* (ib., 1901). His parliamentary career is to be followed in *Parliamentary History*, vols. ix-xxi (ib., 1760-62), together with the numerous memoirs, of which those of Whitelock and Ludlow deserve special mention. The *Calendars of State Papers, Domestic Series*, together with the great collections of Rushworth, Clarendon, Somers, and Carte, are rich mines of material, while the *Thurloe State Papers* (ib., 1742) contain the greater part of the diplomatic correspondence. Gardiner, *Constitutional Documents of the Puritan Revolution* (ib., 1899), is invaluable. Of the older writers, Guizot and Ranke are still useful, but they are largely superseded by the great works of Gardiner, *History of England, 1603-42* (10 vols., London and New York, 1883-84); *The Great Civil War* (ib., 1893); and the *History of the Commonwealth and Protectorate* (ib., 1894-1901). Gardiner has summarized the results of his researches in *Cromwell's Place in History* (ib., 1897) and *Oliver Cromwell* (London, 1901). Hardly inferior to Gardiner's work is Firth, *Oliver Cromwell and the Rule of the Puritans in England* (London and New York, 1900). The biographies by Harrison (London, 1888) and Morley (New York, 1900) are brilliant, but hardly of equal value. The *Oliver Cromwell* of Theodore Roosevelt (ib., 1900) is brief and readable. Gardiner and Mullinger, *Introduction to the Study of English History*, part ii (London, 1894), contains an account of the literature of the period, both contemporary and modern. Later works include: Marshall, *Story of Oliver Cromwell* (New York, 1908); Rhodes, "A New Estimate of Cromwell," in his *Historical Essays* (ib., 1909); Firth, *The Last*

Years of the Protectorate (London, 1909); Wilkinson, "A Narrative of the Circumstances Concerning the Head of Oliver Cromwell," in the *Archæological Journal*, vol. lxviii (ib., 1911); Larned, *A Study of Greatness in Men* (Boston, 1911); Johnstone, *Oliver Cromwell* (London, 1912); Marshall, *Through Great Britain and Ireland with Cromwell* (New York, 1912).

CROMWELL, RICHARD (1626-1712). Lord Protector of England. The third and eldest surviving son of Oliver Cromwell; he was born at Huntingdon, Oct. 4, 1626. When Oliver became Protector, he wished to train his son as his successor. Richard entered Parliament, was appointed one of the Committee of Trade, and became Chancellor of Oxford. But, of an amiable temperament, he was more addicted to pleasure and sport than statecraft, and after his father's death, in 1658, retained the protectorship for not quite nine months, until his willing demission in May, 1659. He lived in retirement on the Continent during 20 years and returned to England in 1680. Richard was of a peaceful, bucolic temperament that little fitted him to play his part in stirring times. He died at Cheshunt, July 12, 1712. Consult Guizot, *History of England under Richard Cromwell* (London, 1856).

CROMWELL, THOMAS, EARL OF ESSEX (c.1485-1540). An English statesman and Henry VIII's prime agent in effecting the Reformation. He was born at Putney, near London, where his father, a man of peculiarly evil character, engaged in the varied pursuits of blacksmith, brewer, innkeeper, fuller, and shearer of cloth. After a meagre education he went to Antwerp as a clerk in a factory and successfully devoted his spare time to learning languages. He spent some time in Italy as a soldier and trader. He returned to England in 1513 and, while following the paternal vocations, developed into a money lender, a lawyer, and an influential citizen. He received a trusted appointment from Cardinal Wolsey and under his patronage entered Parliament, where his able speeches attracted attention. He successfully defended his master against the bill of impeachment, and Henry VIII, appreciating his talent, made him his private secretary. He received a succession of honors, which, after knighthood in 1531, included the Chancellorship of the Exchequer (1533), Mastership of the Rolls and Vicarship-General of Ecclesiastical Affairs (1535), the office of Lord Privy Seal (1536), and that of Lord Chamberlain (1539), and culminated in his creation as Earl of Essex in 1540. For seven years, by subservience to the King, he held supreme sway in the royal councils and controlled all the administrative departments. He carried out faithfully the monarch's schemes to establish the Reformation. His methods in suppressing the monasteries earned him the designation of *malleus monachorum*, the 'Hammer of the Monks.' He was very unpopular, and after promoting the marriage of Henry with Anne of Cleves, the King's aversion to the Queen was extended to the instigator of the union. Henry assented to a bill of attainder for treason on a long list of offenses, and, after a piteous entreaty for mercy, Cromwell was beheaded on July 28, 1540. Froude praises his character. Dixon calls him "the worst enemy the Church of England ever had." Consult: Drayton, *Historie of the Life and Death of the Lord Cromwell* (London, 1609); Hook, *Lives of the Archbishops of Canterbury*, vol. vi (ib., 1868); Froude, *History of*

England (ib., 1881-82); Merriman, *Life and Letters of Thomas Cromwell* (Oxford, 1902); Van Dyke, *Renaissance Portraits* (New York, 1905); Dixon, *History of the Church of England*, vol. i (London, 1884-1902); Gairdner, *The English Church in the Sixteenth Century* (ib., 1902).

CROMWELL, THE LIFE AND DEATH OF THOMAS, LORD. A play of unknown authorship, once attributed to Shakespeare, and entered at Stationers' Hall in 1602. It was founded on the tragic fate of the Earl of Essex. See **CROMWELL, THOMAS**.

CRONACA, krón'a-ká, IL. See POLLATUOLO, SIMONE DEL.

CRONEGK, krón'ek, JOHANN FRIEDRICH, BARON VON (1731-58). A promising young German dramatist of the pre-Lessing period. He was born at Ansbach (in the principality of that name), was educated at Leipzig, where he came under Gellert's influence, and at Halle, and in 1754 received the title of *Hofrat*. His best-known work is his tragedy *Codrus* (1757), in rhymed Alexandrines—a somewhat rhetorical but sonorous imitation of the French classic manner—which was awarded the prize offered by the Berlin bookseller Nicolai for the best German tragedy. His ode *Der Krieg* (1756) was praised by Lessing. He was among the first to direct German scholarship towards the study of Spanish literature. Consult the biography by Gensel (Leipzig, 1894).

CRONENBERG, krón'en-bérk. See **KRONENBERG**.

CRONHOLM, krón'hólm, ABRAHAM PETER (1809-79). A Swedish historian. He was born at Landskrona, was educated at Lund, and in 1849 became professor of history in that city. His works, which are based upon a careful personal study of the archives of Stockholm, Copenhagen, Berlin, Dresden, Vienna, and of other leading European cities, include the following: *Fornnordiska Mnnen* (1833-35); *Katholska Ligan och Huguenotterna* (1839); *Skånes politiska historia* (1847-51); *Sveriges historia under Gustaf II Adolfs regering* (1857-72).

CRONJE, krón'ye, PIETRUS ARNOLDUS (1835-1911). A Boer soldier. In the campaign of 1881 against England he distinguished himself at Doornkop and at Majuba Hill, where he was second in command. In 1896 he captured the raiders led by Dr. Jameson into the Transvaal. At the outbreak of the war against England in 1899 he was stationed with 6000 troops on the western frontier. At Modder River (November 28) he fought an indecisive battle with Lord Methuen, who was marching with his division to the relief of Kimberley, in which he inflicted terrible loss on the enemy, and at Magersfontein (December 11) he won a brilliant victory over the same general. Immediately upon the beginning of Lord Roberts's invasion of the Orange Free State, in 1900, he sent a portion of his army to the north, and with the remainder sought to oppose the English advance on Pretoria. At last surrounded, he entrenched himself at Paardeberg and, under a scathing artillery fire, sustained that position until the failure of food and ammunition compelled him to surrender, with some 4000 troops and six guns, on February 27, the anniversary of Majuba Hill. He was thereupon sent as a prisoner of war to St. Helena. He was one of the most sagacious of the Boer leaders and was a member of the Executive Council of the Transvaal. In 1905

he was forced by poverty to appear in the United States in a mimic war.

CRON'OS. See SATURN.

CRONSTADT, krön'stät. See KRONSTADT.

CROOK, kryk. A coal-mining town in Durham, England, $4\frac{1}{2}$ miles northwest of Bishop Auckland. Pop., 1901, 11,470; 1911, 12,308.

CROOK (ME. *croke*, *crok*, Icel. *krókr*, hook). In musical instruments, such as the French horn or trumpet, a circular tube, which fits into the end of the instrument next the mouthpiece, for the purpose of lengthening the tube of the instrument and thus altering the pitch to suit the key of the music. These crooks save the player the great inconvenience of carrying as many instruments as there are keys in which he is to play.

CROOK, GEORGE (1828-90). An American soldier, born near Dayton, Ohio. He graduated at West Point in 1852 and spent the next nine years in California. He became colonel of the Thirty-eighth Ohio Volunteers and captain of the Fourth Infantry in the Federal army in 1861, served throughout the Civil War, and in March, 1865, was brevetted brigadier general and major general for services during the war. In March and April, 1865, he was in command of the cavalry of the Army of the Potomac. In 1866, as lieutenant colonel in the regular army, he was sent to Idaho, where he remained until 1872, in almost constant warfare with the Indians there. He subdued the tribes in Arizona in 1872 and in 1875-77 completely crushed the power of those in the Northwest, after Custer's defeat at their hands. He protected the Apaches (1882) from the encroachments of the Mormons and others on their lands, and defeated the Chiricahuas in 1883. Obtaining sole charge of all the tribes, he encouraged them in their industries and made them self-supporting communities. He was promoted to the rank of brigadier general in 1873 and to that of major general in 1888. From this year until his death he was in command of the Department of the Missouri.

CROOK, ISAAC (1833-). An American clergyman and educator, born at Crossenville, Perry Co., Ohio. In 1859 he graduated from Ohio Wesleyan University, and, having been ordained (1864) to the Methodist Episcopal ministry, he held pastorates in Ohio, Illinois, Michigan, Minnesota, and Kentucky. He was president of the University of the Pacific in 1891-92 and of Ohio University in 1896-98, and chancellor of Nebraska Wesleyan University in 1892-96. After serving for four years as pastor at Ironton, Ohio, he was presiding elder of the Chillicothe District, from 1902 to 1908. He is author of *Character Sketch of Hon. C. C. White, of Crete, Nebraska* (1896), *Jonathan Edwards* (1903); *Earnest Expectation* (1905), *John Knox, the Reformer* (1906); *The Great Five* (1907).

CROOKBILL. See WEYBILL.

CROOKED ISLANDS. A group of the Bahamas, consisting of Crooked Island, Acklin Island, Fortune Key, and Castle Island. The largest, Crooked Island, contains 76 square miles (Map: West Indies, D 2). In common with some others of the group, it is valuable chiefly for its salt. Pop., 1911, Acklin Island 1733, Crooked Island 1541. Chief town, Pitt's Town.

CROOKED LAKE. See KEUKA LAKE.

CROOKES, kryks. SIR WILLIAM (1832-).

An English physicist and chemist, born in London, June 17, 1832. He studied at the Royal College of Chemistry, where he later assisted Hofmann. In 1864 he became superintendent of the meteorological department of the Radcliffe Observatory, Oxford, and in 1865 professor of chemistry at the Chester Training College. After 1859 he was editor and proprietor of the *Chemical News*, which he had founded, and after 1864 he also edited the *Quarterly Journal of Science*. He was foreign secretary of the Royal Society in 1908-12, at various times was president of the Chemical Society, the British Association, and the Institute of Electrical Engineers, and was chosen corresponding member of numerous continental societies. In 1897 he was knighted; in 1907, with Edouard Buchner, he was awarded the Nobel prize for chemistry; and in 1910 the Order of Merit was conferred upon him. He is an authority of the first rank on sanitary questions, especially the disposal of the sewage of towns, and his method of producing extreme vacua rendered incandescent electric lighting a practical possibility. His original researches in chemistry and physics led to the discovery of the metal thallium in 1861. Subsequently he devoted several years to an elaborate investigation on the atomic weight of that element. Among his other discoveries may be mentioned the sodium amalgamation process for separating gold and silver from their ores (1865), and especially his new method for the spectroscopic investigation of substances—one of the numerous and brilliant results of his prolonged studies of "radiant matter." He also devised the radiometer (q.v.) and later the otheoscope, a greatly improved form of the radiometer. Among his publications may be mentioned: *A Practical Handbook of Dyeing and Calico Printing* (2d ed., 1883), an English translation of Wagner's *Chemical Technology* (2d ed., 1894); *Select Methods of Chemical Analysis* (4th ed., 1905); *Diamonds* (1909); papers on spectroscopy and psychic research. His original views on the genesis of the elements may, with the development of knowledge, form an important contribution to chemical philosophy.

CROOKES TUBE. A sealed vessel of glass from which the air has been exhausted and a high vacuum obtained, through which a current from an induction coil or other source of high-potential electricity is passed. A Crookes tube differs from a Geissler tube (q.v.) in the higher degree of its exhaustion and in several important particulars which will appear in the description of its operation given below. The name is derived from Sir William Crookes (q.v.), who was able by his improvements in the Sprengel pump (see AIR PUMP) to obtain vacuum tubes of greater efficiency than those of previous investigators. Crookes was not the inventor of the highly exhausted tube, as Hitrtorf, of Münster (1869), had performed a number of experiments with tubes having a comparatively high vacuum; but it remained for the English investigator to push the experiments still further and to formulate hypotheses and theories.

A Crookes tube contains two or more electrodes known as the cathodes and anodes. These are formed by platinum wires which pass through the glass walls of the tube and terminate in metallic plates of the material and shape desired for the experiment. The exhaustion is effected by connecting the tube to a mercurial

air pump and then sealing it when the proper point is reached. The terminals are then connected with an induction coil, or other source of high potential, which is set in operation. The important peculiarity of such a vacuum tube noticed by Professor Hittorf consists of a fluorescence (q.v.) or golden-green glow produced on the glass opposite the cathode. There is not the brilliancy of glow that is found throughout the tube as in the Geissler tube, and the rays which produce the fluorescence issue from the surface of the cathode in straight lines normal or perpendicular to that surface, not being bent to follow the shape of the tube, as would be seen in tubes of a less degree of exhaustion. These cathode rays have many other interesting properties. They may be deflected by a magnet, and they cause a number of substances, such as diamonds and rubies, on which they impinge, to become brilliantly phosphorescent; their energy is sufficient to heat to a high temperature a surface on which they fall and can also be exhibited in causing a small wheel with mica vanes, mounted within the tube, to revolve as a result of the impact. Crookes used cathodes of plane, convex, and concave surface, from which the rays would be emitted in beams either parallel, diverging, or converging. After studying these rays and their properties he concluded that the discharge from the cathode represented a new form of matter which he considered as existing in an ultragaseous or radiant state. The most important use of the Crookes tube is for the production of Röntgen rays, or X-rays (q.v.), which are the rays passing out from the tube opposite the cathode. To produce these rays a tube must be employed where the vacuum is adapted to the work in hand, and there are self-regulating tubes on the market in which this property is obtained. In 1913 a tube susceptible of more exact regulation and power, as well as requiring less time of exposure, was devised by W. D. Coolidge, in which the cathode is formed of a tungsten filament maintained at a high temperature through the passage of current from a storage battery. These tubes have a very high vacuum and give a pure electric discharge. The absence of fluorescence is a notable feature. See ELECTRICITY for an account of the passage of a current through rarefied gases.

CROOKES VACUUM. See MATTER, *Theories of Matter*.

CROOKS, GEORGE RICHARD (1822-97). An American Methodist theologian. He was born in Philadelphia and graduated in 1840 from Dickinson College, where he later taught for several years. Between 1848 and 1880 he held pastorates in Philadelphia, Wilmington (Del.), New York City, and Brooklyn (N. Y.); thereafter until his death he was professor of historical theology at Drew Theological Seminary. Professor Crooks, one of the most influential and distinguished Methodist theologians of his time, was instrumental in inducing his church to sanction seminaries as a training for its ministry. He edited the *Methodist* from 1860 to 1875 and published an edition of Butler's *Analogy* (1852); *The Life and Letters of Rev. Dr. John McClintock* (1876); *Sermons* (1885) and *Life* (1890) of Bishop Matthew Simpson; and *The Story of the Christian Church* (1897).

CROOKS, WILLIAM (1852-). An English labor leader. He was born in a London poorhouse, was apprenticed to a cooper when he was 14, and became active in the labor-union

movement. He was a member of the London County Council after 1892, mayor of Poplar in 1901, was elected to Parliament from Woolwich in 1903, and was reelected in 1906 and 1910.

CROOKSTON, kruk'ston. A city and the county seat of Polk Co., Minn., 230 miles west by north of Duluth, on the Red Lake River, which affords abundant water power, and on the Great Northern and the Northern Pacific railroads (Map: Minnesota, A 3). Among noteworthy features are the Government Land Office, Carnegie library, Federal building, courthouse, St. Joseph's Academy, Bethesda Hospital, and the Northwestern School of Agriculture. The city derives a considerable trade from a tributary agricultural country and manufactures lumber, farm machinery, gas engines, castings, sashes and doors, leather goods, furniture, wagons, biscuits, etc. Crookston was incorporated in 1879. The government is administered by a mayor and a council. Pop., 1900, 5359; 1910, 7559.

CROOKSVILLE. A town in Perry Co., Ohio, 64 miles by rail southeast of Columbus, on the Zanesville and Western and the Cleveland, Akron, and Cincinnati railroads (Map: Ohio, F 6). It has large deposits of potter's clay, and there are a number of pottery plants, a crate factory, brickworks, and coal mines. Oil is also produced in considerable quantities. Pop., 1900, 835; 1910, 3028.

CROPPIES. A derisive nickname given by the Protestant Irish to their Catholic opponents in the time of the English Revolution of 1688. The name was applied to the Irish rebels of 1798 because of their sympathy with the French Revolutionists. The Roundheads were so called in 1642. A factional Irish song called "Croppies Lie Down!" was a favorite with Orangemen.

CROPSEY, JASPER FRANCIS (1823-1900). An American landscape painter, born at Rossville, N. Y. At first he studied architecture, but he abandoned it to study art and in 1847 visited Italy. He spent seven years in London and exhibited at the Royal Academy. His "Autumn on the Hudson" and "Richmond Hill" were praised by John Ruskin. Cropsey belonged to the so-called Hudson River school (q.v.) and painted mostly views of the White Mountains or the Hudson and English landscapes of similar type. His earlier works were in great demand; they are good in color and show much skill and feeling, of which scarcely a trace remains in his later pictures. Other pictures by him are: "Niagara Falls" (Brooklyn Museum); "Landscape" (Metropolitan Museum, New York); "Lake George," "View near Rome," and "Sunset, Lake George" (New York Public Library); "The Sibyl's Temple"; "High Town, Rockland Lake." Consult Isham, *History of American Painting* (New York, 1905).

CROQUEMITAINE, krok'mé'tân' (Fr., from *croquer*, to crunch). A French monster or bogey invoked by nurses to frighten unruly children. In L'Epine's *Légende de Croquemitaine*, Mitaine, a goddaughter of Charlemagne, searches for the castle of Croquemitaine, near Saragossa.

CROQUET. See ROQUE.

CRORE. See LAC.

CROSBY, KRŌZ'bĭ, ALPHEUS (1810-74). An American educator and author. He was born at Sandwich, N. H., graduated at Dartmouth in 1827, and studied theology at Andover from 1831 to 1832. He became professor of Latin and Greek at Dartmouth in 1833 and of Greek

only in 1837. From 1857 to 1865 he was principal of the Salem (Mass.) Normal School. He published an edition of the *Anabasis*; *The Second Advent* (1850); *First Lessons in Geometry* (1851); *A Compendious Grammar of the Greek Language* (1871); *Greek Tables* (rev. ed., 1871); *Greek Lessons* (rev. ed., 1872).

CROSBY, ERNEST HOWARD (1856-1907). An American reformer and author, born in New York City. He was educated at New York University and the Columbia Law School. While a member of the State Assembly (1887-89), he introduced three high-license bills, all vetoed by the Governor. From 1889 to 1894 he was judge of the Court of the First Instance at Alexandria, Egypt. He became an exponent of the theories of Count Tolstoy, whom he visited before his return to America. His relations with the great Russian later ripened into intimate friendship, and he devoted himself in America largely to promulgating Tolstoy's ideas of universal peace. His book, *Plain Talk in Psalm and Parable* (1899), was widely commended by such writers as Bjornson, Kropotkin, and Zangwill. He is also author of *Captain Jinks, Hero* (1902); *Swords and Plowshares* (1902); *Tolstoy and his Message* (1903; 2d ed., 1904); *Tolstoy as a Schoolmaster* (1904). *Garrison, the Non-Resistant* (1905); *Broad-Cast* (1905), *Labor and Neighbor* (1908).

CROSBY, FANNY (MRS. FRANCES JANE VAN ALSTYNE) (1820-1915). An American hymn writer, born at South East, Putnam Co., N. Y. She lost her eyesight when an infant six weeks old. After attending the Institution for the Blind, in New York City, for nine years, she became instructor in Greek and Roman history and in various other branches at that institution, until her marriage to Alexander Van Alstyne in 1858. Some of her several thousand hymns are contained in Moody and Sankey's *Gospel Hymns* and in Mr. Sankey's *Sacred Songs and Solos*. Among her best-known verses are: "Safe in the Arms of Jesus", "Pass Me Not, O Gentle Saviour"; "Jesus is Calling"; and "I am Thine, O Lord." Her songs include the well-known "There's Music in the Air" and "Hazel Dell." Her secular poems have been published under the titles *The Blind Girl and Other Poems* (1844) and *Bells at Evening and Other Poems* (1898). Consult her *Memories of Eighty Years* (1906).

CROSBY, HOWARD (1826-91). An American Presbyterian clergyman, born in New York City. He graduated at New York University in 1844, was professor of Greek there in 1851-59, and subsequently held the same chair in Rutgers College. He was ordained in 1861 and became pastor of the First Presbyterian Church in New Brunswick, N. J. From 1863 to 1891 he was pastor of the Fourth Avenue Presbyterian Church, New York, and from 1870 to 1881 was chancellor of his alma mater. He was moderator of the General Assembly of 1873. He was instrumental in organizing, and for several years was president of, the Society for the Prevention of Crime and was prominent in his activity against the illegal liquor traffic, but distinguished between temperance and total abstinence. He was a member of the American Committee which revised the New Testament. Besides sermons and addresses, he published: *The Lands of the Moslem* (1851); *Notes on the New Testament* (1863); *Social Hints for Young Christians* (1866); *Jesus: His*

Life and Works (1870); *Thoughts on the Pentateuch* (1873); and commentaries on Nehemiah, Joshua, etc.

CROSBY, JOHN SCHUTLER (1839-1914). An American soldier. He was born in Albany Co., N. Y., was educated at New York University, was appointed second lieutenant of the First Artillery in 1861, served throughout the Civil War, and, after being three times brevetted, acted for a time as adjutant general on the staff of General Canby. Subsequently he served as aid, with rank of lieutenant colonel, under Sheridan and Custer against the Indians, and resigned from the army in 1871. He was United States Consul at Florence, Italy, from 1876 to 1882; was Governor of Montana Territory from 1882 to 1884; and from 1884 to 1886, when he resigned, was First Assistant Postmaster-General. In 1889 he served as school commissioner of the city of New York.

CROSBY, PRICE (1823-99). An American naval officer. He was born near Chester, Pa., entered the navy in 1838, and in 1861 served in Chesapeake Bay. He participated in the capture of New Orleans and the bombardment of Vicksburg, and in 1863-64 was employed chiefly in blockade duty. In 1864 he was placed in command of the *Metacombet* and participated in the attack on Mobile. He was promoted to be captain in 1868, commanded the South Atlantic squadron, was made rear admiral in 1882, and in 1883 was retired.

CROSBY HALL. A mediæval Gothic dwelling house in London on Bishopsgate Street, built in 1466 by Sir John Crosby. It is the scene of a part of Shakespeare's *Richard III.* Richard of Gloucester lived here for a time, and Sir Thomas More, who purchased the house, wrote his *Utopia* in it. Some of the original chambers still remain. The hall, after having been used for a variety of purposes, is now an eating house.

CROSIER (ME. *croser, crocer*, from *cros, crosse, croce, cross*, from Latin *crux, cross*). The pastoral staff of a bishop. Throughout antiquity a hooked or curved staff had been an emblem of civil and particularly of religious authority. The crozier is sometimes regarded as derived from the staff of the Roman augurs. It was adopted by early Christian bishops as a symbol of authority. It took two forms—that of the *tau* (T) with a short transverse top piece, giving the shape of a small *crux commissa*, in which the cross appears as a symbol of the authority by which the bishop ruled; and that of the curved end or volute, imitating the shepherd's crook, emblem of the office of the bishop to keep the Lord's sheep. The *tau* form seems the earlier, judging from extant monuments, for no records of the crook form exist as early as the Carolingian period. The *tau* often ends in the head of a lion, emblem of episcopal power; the crook often impales a serpent or a dragon, symbol of the triumph over evil. Abbots were often



CROSIER.

privileged to carry the crossier, as a symbol of their pastoral office, as early as the fifth century, and long before the other episcopal insignia of mitre and cross were allowed to them. Some of them still retain the *pannisellum* (a small silk veil hanging to the staff), which has long disappeared from those of bishops. Consult: Barraud and Martin, *Le bâton pastoral* (Paris, 1856); Lind, *Ueber den Krummstab* (Vienna, 1863). See COSTUME, ECCLESIASTICAL.

CROSLAND, THOMAS W (ILLIAMS) H (ODGSON). A British editor and author. He became known as a contributor to the *Leeds Mercury* supplement, *Yorkshire Weekly Post*, *Black and White*, *Saturday Review*, *The Gentlewoman*, *Public Opinion*, and the *Evening Standard*. From 1899 to 1902 he was assistant editor of the *Outlook* (London). In 1905 he became editor of the *English Review*, in 1911 editor of the *Penny Illustrated Paper*, and later assistant editor and director of the *Academy*. His writings include: *The Unspeakable Scot* (1902); *Lovely Woman* (1903); *The Lord of Creation* (1904); *The Enemy* (1904); *The Wild Irishman* (1905); *The Suburbans* (1905); *Red Rose, verse* (1905); *The Country Life* (1906); *The Beautiful Tectotaller* (1907); *English Songs and Ballads* (1907); *Sonnets* (1912); *Taffy Was a Welshman* (1913).

CROSSMAN, HENRIETTA (1870-). An American actress, born at Wheeling, W. Va., Sept. 2, 1870. She made her début in 1889 in *The White Slave* and later was successively under the management of Daly and the Frohmans. In 1897 she was married to Maurice Campbell. In the following year she became a star. Her greatest successes have been her production of George C. Hazleton's *Mistress Nell*, Oct. 9, 1900, in New York, where it ran for over 100 performances, and her Rosalind in *As You Like It* (Feb. 27, 1902), which ran for eight weeks at the Theatre Republic, New York. After this she appeared in many popular successes, including *The Sword of the King* (1902); *Sweet Kitty Bellairs* (1903); *All-of-a-Sudden Peggy* (1906-07); *Sham* (1909); *Anti-Matrimony* (1910); *The Real Thing* (1911).

CROSS (AS. *cræc*, OHG. *crûci*, *chrûci*, *chrûze*, Ger. *Kreuz*, Prov. *crois*, *croiz*, OF. *crois*, *croiz*, *croiz*, *croiz*, Fr. *croix*, It. *croce*, *cross*, from Lat. *crux*, *cross*). The cross was a common instrument of capital punishment among the ancients; and the death on the cross was deemed so dishonorable that only slaves and malefactors of the lowest class were subjected to it by the Romans. It was customary to proclaim the name and offense of the person crucified, or to affix to the cross a tablet (*album*) on which name and offense were inscribed. Malefactors were sometimes fastened on a simple upright stake, and so left to die, or they were impaled upon it, and to this upright stake the Latin name *crux* was originally and more strictly applicable; but very generally a crosspiece (*patibulum*) was added to the stake, to which the arms of the criminal were tied, or to which his hands were nailed. The person crucified often lived for days. When the crosspiece was fastened at right angles below the summit of the upright stake, the cross was called *crux immissa* (the Latin cross); the Greek cross, where the crosspiece was set so low as to form four equal or nearly equal arms, is a variant of this form; when the crosspiece was fastened at right angles across the top of the upright stake, the

cross was *crux commissa* (also called "cross of St. Anthony"); and when it was formed of two beams crossing one another obliquely, it was *crux decussata* (also called "cross of St. Andrew"). The cross was erected outside the gates of towns, but in places of frequent resort.

It appears that the cross was in use as an emblem, having certain religious and mystic meanings attached to it, long before the Christian era. The Spanish conquerors were astonished to find it an object of religious veneration among the natives of America. But the death of Christ by crucifixion led Christians to regard it with peculiar feelings of veneration and to adopt it as a symbol with express reference to the central fact of their religion. It was seen everywhere in Christian countries, in the home as well as in the church, where it formed an invariable ornament of the altar. The Iconoclastic party contended against the worship of the cross, but the Church, while defining the sense in which worship might be offered to it, condemned their views. Though the word *latreia*, 'adoration,' is used of the veneration paid to the cross, it is explained as only relative, and referred back to the person of the Crucified. This species of veneration, which is sometimes misunderstood on account of the restricted use of the word "worship" in modern English, is solemnly paid in the Roman Catholic church to pieces of the true cross (considered the most sacred of all relics) whenever exposed, and to other crosses, especially on Good Friday. The cross on the high altar, which has been wrapped in a violet covering throughout Passiontide, is unveiled during the singing of the anthem "Behold the wood of the Cross, on which the Saviour of the world hung." It is then laid on the altar steps, and the celebrant and other sacred ministers approach with genuflections and kiss it. After this a smaller cross is offered to the congregation, kneeling at the altar rails, to be kissed. (Consult Cardinal Wiseman, *Lectures on the Offices and Ceremonies of Holy Week*, London, 1839.) The earliest account of the solemn veneration of the cross occurs in the *Peregrinatio Sanctæ Silviæ ad Loca Sancta*, recently discovered by Gamurrini and published in Rome, 1887-88, which describes a pilgrimage to Jerusalem during the episcopate of St. Cyril, probably in the year 384 or 385. The sign of the cross has been made in Christian worship, since the second century at least, as an act of homage to God in remembrance of the Redemption, and of blessing to the person or object over which the sign is made. It is differently made in the Roman Catholic and Eastern churches, and has been disused among most Protestants, as a ceremony of human invention tending to superstition. A cross was in the Middle Ages prefixed to most inscriptions and documents as a sort of consecration, and placed before signatures for the same reason; the latter practice is still retained by Roman Catholic bishops. At the time of the Reformation the use of the cross was discontinued in the Anglican church, but later a reaction in its favor set in. At the present time it is often seen upon the altar of the churches of the Anglican communion and is also frequently carried before the procession of choir and clergy. The Lutheran churches have retained the cross behind the altar, and they occasionally use the sign of the cross in liturgy. This is the authoritative practice in the Anglican

churches at baptism and in the anointing of the monarch at the coronation.

The forms given to crosses in art are endless; but the two leading types are the Latin cross, or *cruz immissa*, supposed to be that on which Christ suffered, and the Greek cross, both of which are subject to many fantastic variations. The Greek cross forms the well-known cross of St. George, which, adopted from the legends of that hero, was the national ensign of the English previous to the union with Scotland. (See UNION JACK.) The cross of St. Andrew, according to the legend, was the form of cross on which St. Andrew, the national saint of Scotland, suffered martyrdom. As the Scottish ensign, it is now blended with the cross of St. George in the Union Jack. The Maltese cross, with its eight forked ends, was a form used by the Knights of Malta. It is similar to the crosslet form where small crosses are formed at the ends.

Sanctuary, Boundary, or Monumental Crosses, as they are called, consist of an upright that pillar, or obelisk, covered with sculptured devices and set in a socket level with the ground. Occasionally they appear to have marked boundaries, but more frequently were monuments over the graves of heroes, kings, bishops, etc. In some instances they probably marked the verge of a sanctuary. The older of these crosses are said to be Scandinavian or Danish, and such are known as *runic crosses*, being inscribed with runes. We are told that the island of Iona at one time possessed 360 crosses, but all are now destroyed or dispersed, except one, called St. Martin's Cross, standing in the grounds of the cathedral. It is a column of compact mica schist, 14 feet high, 18 inches broad, and 6 inches thick, and is fixed in a pedestal formed out of a massive block of red granite, about 3 feet high. In connection with certain ancient religious houses in Ireland, there were some very fine crosses of this kind, the most gigantic and impressive which still exists being that of St. Luke's in the County of Louth. The prominence of such crosses extended to the East, where the Gothic and other tribes of the Caucasus, Georgia, and Armenia also used them prominently in church sculpture and in cemeteries.

Memorial Crosses are those which were erected in memory of some beloved object, or in commemoration of some event of local importance. In England there are some superb crosses of this kind: they are popularly called *Norman crosses*. This species of cross resembled a Gothic turret set on the ground or on a base of a few steps, and was erected by Edward I (1290) in memory of his queen, Eleanor, being placed on the spots where the body rested in its funeral progress to Westminster. Of the 15, three remain—at Geddington, Northampton, and Waltham.

Town or Market Crosses were erected as stands to preach from, or in commemoration of events regarding which it was deemed proper to evoke pious feelings. As these structures were incorporated with or surmounted by a crucifix, the term *cross* was so indelibly associated with them that it survived the religious character of the fabrics. The earliest examples of this kind consisted, probably, of tall crucifixes of wood, such as are still seen by the wayside in some continental countries. Afterward stone shafts would be substituted; and according to the in-

crease of market revenues, or progress of taste, these town crosses assumed that imposing character which they latterly possessed. Of the larger ornamental crosses of this kind, there are some striking specimens in England, such as that at Cheddar in Somersetshire, and that at Malmesbury in Wiltshire; both are open-vaulted structures, with a commodious space beneath, as a refuge for poor market folks during rain, and surmounted with a kind of Gothic turret. At Chichester, Bristol, and Winchester the market crosses, while similar in form, are of a higher architectural quality. Adjoining St. Paul's in London, stood Paul's Cross, a structure which we read of as early as 1259, in the reign of Henry III. It was essentially a town preaching cross and is associated with some interesting occurrences in history. Before this cross the unfortunate Jane Shore, the mistress of Edward IV from 1470 to 1483, was forced to do penance in the reign of Richard III. Here Dr. Shawe, in his infamous sermon, attempted to bastardize the children of Edward and enlorged Richard. In front of this cross sat Cardinal Wolsey to hear fulminations against Luther; and about 10 years later, by order of Henry VIII, preachers here delivered sermons in favor of the Reformation. At this cross Queen Elizabeth attended to hear a thanksgiving sermon for the defeat of the Spanish Armada. Here sermons continued to be delivered until 1643, when, with other so-called relics of popery, it was demolished by order of Parliament. Whatever was the original form of Paul's Cross, it was in later times a plain, pulpit-like fabric of wood, covered with lead.

The Scottish town crosses, while simple, had some distinguishing features. The more simple kind consisted of a shaft of stone, generally octangular in shape, and 12 or more feet in height. At the top was an ornamental capital, which bore a dial and vane, or the figure of a unicorn. The shaft sprang from the top of a graduated flight of circular or octangular steps. A specimen of this species of cross is seen in the market place of Melrose. The grander market cross consisted of a tall stone shaft, such as just described, but instead of having steps it sprang from the centre of an imposing substructure. This structure was circular, hexagonal, or octagonal, and from 10 to 16 feet high. The top formed a platform, which was surrounded with an ornamental stone parapet and was reached by a stair inside. The sides of the building were decorated with pilasters and bore various heraldic and other devices. Such were the crosses of Edinburgh, and such is the renovated cross of Aberdeen, the sides of which, however, are open. Losing their religious character, the Scottish market crosses were employed for royal and civic proclamations, and as places where certain judicial writs were executed. The general removal of these ancient and interesting structures has often been a matter of lamentation.

In the history of the cross as a Christian symbol, it is evident that it was used at first as a symbol of triumph, not of suffering. In the sarcophagi and mosaics from the fourth to the ninth century it often stands alone on the sacred rock from which flow the Four Rivers of Paradise. It is sometimes surmounted by the Constantinian monogram of Christ, the Labarum, and thus became the standard of victorious Christianity. It was inscribed within

the circle around the head of Christ, thus forming the cruciform nimbus (q.v.). As an emblem of Christ, it preceded the crucifix, and it was not until the tenth and eleventh centuries that the figure of Christ had quite generally replaced on the cross the ornamentation which had previously been its usual decoration. Even when the monumental crucifixes had come into general use in central and southern Europe, the northern nations (e.g., Great Britain and Scandinavia) continued for centuries the use of the mere cross. The form of the cross given to the majority of churches in the later Middle Ages is more connected with the specific crucifixion than the mere cross, as is shown by the bend sometimes given in some church ground plans, imitated from the twist of the body on the cross. Consult: Stockbauer, *Kunstgeschichte des Kreuzes* (Schaffhausen, 1870); Fulda, *Das Kreuz und die Kreuzigung* (Breslau, 1878); Dobbert, *Zur Entstehungsgeschichte des Kreuzes* (1880); Bunsen, *Das Symbol des Kreuzes bei allen Nationen* (Berlin, 1876); Alger, *History of the Cross* (Boston, 1858); Mortillet, *Le signe de la croix avant le christianisme* (Paris, 1866); Zieckler, *Das Kreuz Christi* (Gütersloh, 1875); Forrer and Müller, *Kreuz und Kreuzigung Christi in ihrer Kunstentwicklung* (Strassburg, 1893). See also the bibliographies of CRUCIFIX and JESUS CHRIST IN ART.

CROSS. In heraldry (q.v.), one of the charges known as "ordinaries."

CROSS, CONGREGATION OF THE HOLY. See HOLY CROSS, CONGREGATION OF THE.

CROSS, INVENTION OF FINDING OF THE. The name of the Church festival commemorative of the finding of the cross upon which Christ died by the Empress Helena, the mother of Constantine, in the year 326. As related by Socrates (*Ecclesiastical History*, I, xvii), who wrote about 439, the story is this: In Christ's sepulchre she found three crosses, along with Pilate's tablet, and on the advice of Macarius, Bishop of Jerusalem, determined which was Christ's cross by taking the three to a sick woman, who touched the first two without avail, but was restored as soon as she had touched the third—so that was accepted as Christ's. Similar is the story in Sozomen (*Ecclesiastical History*, II, i), who wrote a little later. From this time on for many centuries there was no question of the fact. Doubt has been cast upon it by the consideration that Eusebius, who wrote in the fourth century, and who was particularly explicit regarding everything relative to the Constantine family in his account of Helena's visit to the Holy Land (*Life of Constantine*, III, lii), says nothing of her discovery of the crosses, nor when speaking of the erection of the church over the Holy Sepulchre (ib., III, xxviii et seq.). It is also noteworthy that the Bordeaux Pilgrim, the author of the *Itinerarium Burdigalense*, writing in 333, says nothing in his description of the holy places of any cross being discovered in the Holy Sepulchre (*Itinerary from Bordeaux to Jerusalem, Palestine Pilgrim's Text Society's Eng. trans.*, London, 1877, p. 24). Still Cyril of Jerusalem, writing in the Holy City in 347-348, uses this language: "He was truly crucified for our sins. For if thou wouldest deny it, the place refutes thee visibly, this blessed Golgotha, in which we are now assembled for the sake of Him who was crucified, and the whole world has since been filled with pieces of the wood of the cross"

(*Catechetical Lectures*, IV, 10). And he alludes to the finding of the cross when writing to Constantius, the son of Constantine (*Ep. ad Const.*, c. 3); though the authenticity of this letter has been questioned, but not disproved. That Helena found three crosses and that she and many others believed that one of them was the cross of Christ may be accepted, though we have no confirmatory proof of its authenticity.

The festival of the Invention of the Cross may date from the visit of Helena, but unless it was at first local, the earliest certain mention of it is in the eighth century. In the Latin church the day is May 3. In the Greek church there is a festival of the Exaltation of the Cross on September 14. Consult, in favor of the story: J. H. Newman, *Essay on Ecclesiastical Miracles*; and as against it: W. C. Prime, *A History of the Invention, Preservation, and Disappearance of the Wood Known as the True Cross* (New York, 1877); E. Nestle, *De Sancta Cruce, Ein Beitrag zur christlichen Legendengeschichte* (Berlin, 1889); Staley, *The Liturgical Year* (London, 1907).

CROSS, JUDGMENT OF. See ORDEAL.

CROSS, ORDER OF THE HOLY. See HOLY CROSS, ORDER OF.

CROSS, SOUTHERN. See CRUX.

CROSS, VICTORIA. See VICTORIA CROSS.

CROSS, CHARLES ROBERT (1848—). An American physicist, born at Troy, N. Y. He graduated in 1870 at the Massachusetts Institute of Technology and was instructor there in 1870-77. In 1877 he was appointed professor of physics and director of the Rogers laboratory. He established at the institute in 1882 the first American course in electrical engineering. His publications include: *Course in Elementary Physics* (1873); *Lecture Notes on Mechanics and Optics* (1884); *Notes on Mechanics* (1908; 2d ed., 1911).

CROSS, MARY ANN, or MARIAN. See ELIOT, GEORGE.

CROSS, MRS. GEORGE FREDERICK. See CAMBRIDGE, ADA.

CROSS, RICHARD ASSHETON, first Viscount Cross (1823-1914). An English politician. He was born at Red Scar, Lancashire, graduated at Trinity College, Cambridge, in 1846, and in 1849 was called to the bar. He sat in Parliament as a Conservative, for Preston from 1857 to 1862, for Southwest Lancashire from 1868 to 1885, and for the Newton Division, Southwest Lancashire, from 1885 to 1886. From 1874 to 1880 and in 1885-86 he was Home Secretary, and from 1886, when he was made Viscount, to 1892 Secretary of State for India. In 1887 he headed a commission on the working of the Education Acts, which brought in reports diametrically opposed to each other. He published *The Acts Relating to the Settlement and Removal of the Poor* (1853) and *The General and Quarter Sessions of the Peace* (1856).

CROSS, (CHARLES) WHITMAN (1854—). An American geologist, born at Amherst, Mass. He was educated at Amherst College and the University of Leipzig. In the United States Geological Survey he was assistant geologist in 1880-88, geologist after 1888, and chief of the section on petrology in 1903-06. In 1911 he became treasurer of the National Academy of Sciences. He is author, with three others, of the important *Quantitative Classification of Igneous Rocks* (1903), a new system with new nomenclature (see PETROGRAPHY). He also pre-

pared a number of Geological Survey bulletins and in 1902 published *The Development of Systematic Petrography in the Nineteenth Century*.

CROSS, WILBUR LUCIUS (1862-). An American educator and author, born at Mansfield, Conn. He graduated in 1885 at Yale University, and from 1894 to 1897 was instructor in English in the Sheffield Scientific School. In 1897 he was appointed an assistant professor in English and in 1902 professor. In addition to magazine contributions on Ibsen, the novel, and editions (with notes and essays) of *Macbeth* (1900), the *Works of Laurence Sterne* (1904), and Defoe's *Robinson Crusoe* (1911), his publications include an excellent handbook, *The Development of the English Novel* (1899), and *Life and Times of Laurence Sterne* (1909). He contributed to the first edition of the *NEW INTERNATIONAL ENCYCLOPEDIA*. Under his editorship the *Yale Review* at once took a high place among contemporary periodicals.

CROSSBILL. A bird of the genus *Loxia*, large finches with a singular bill, the mandibles—which are rather long, thick at the base, and much curved—crossing each other at the points when the bill is closed. These mandibles are capable not merely of vertical but of lateral motion, and muscles of extraordinary power are provided for moving them; so that the crossbills readily obtain their principal food—the seeds of firs and pines—by tearing off the scales of the cones. They bring the points of the mandibles together (which they can do so as to pick up a very small seed) and insert them into the cone, when the act of allowing the points to slip past one another exerts a powerful lateral movement, opening the scale; and the tongue, which terminates in a singular movable scoop, formed of a bone articulated to the os hyoides, or ordinary bone of the tongue, is inserted to detach the seed.



BEAK OF THE CROSSBILL.

Side view, shut and open, and top view.

The power of the bill is such that wood may be torn to pieces, and crossbills in confinement seem to take a mischievous pleasure in destroying the cage. An apple is cut to pieces almost in an instant, in order that its seeds may be reached, and flocks of these birds sometimes do great mischief in orchards. Three or four species are known, two of which are found in America, although only one, the common red crossbill (*Loxia curvirostris*), is numerous, and even this in most years is scarcely to be seen in the United States. It is a native of Europe, Asia, and North America, dwelling chiefly in evergreen forests and extending as far north as they do, not dreading the coldest climates. The American bird is regarded as a subspecies, and a second subspecies is found from the southern Rocky Mountain region to central Mexico. The white-winged crossbill (*Loxia leucoptera*) is the other American species, but is not so common as the preceding. Both species are red in the males and olive brown in the females, the former species with blackish wings and the latter having wings crossed by two conspicuous white bars. They go about in small, chattering flocks and are resident in the most northern parts of the

United States and in Canada. They breed in the late winter or early spring, sometimes during very severe weather.

CROSS BILL. In chancery or equity, a bill, or petition, filed by the defendant in an equity proceeding against the plaintiff or against other defendants, or both, in the same suit, either to obtain a discovery of facts in aid of the defense, or to bring the matters in dispute more completely before the court than could be done by a mere answer to the original bill. The cross bill must not introduce new parties nor new matter not embraced in the original suit, and is considered as an auxiliary suit in the nature of a defense to the original bill, the two proceeding together as one cause. However, the persons made defendants in it must answer, plead, or demur to it, or the relief demanded will be granted by default. Cross bills are used in the equity practice of the United States and many of the State courts and in the English chancery courts. See **BILL**; **DISCOVERY**, **BILL OF**, **EQUITY**; also **PLEADING**; and consult the authorities there referred to.

CROSSBOW. See **ARBALEST**; **ARCHERY**.

CROSS BREEDING. See **BREEDING**.

CROSS BREEDING IN MAN. Intercrossing in animals, as among plants, may, within due limits, be beneficial. These limits are confined to the same variety, race, or stock. If individuals of widely different races or breeds intermix, the result is degeneracy and sterility, the outcome of such unions being of the same nature as hybrids between different though allied species. As Darwin states: "After plants have been propagated by self-fertilization for several generations, a single cross with a fresh stock restores their pristine vigor; and we have a strictly analogous result with our domestic animals." This will apply to man also. When the French aristocracy was, as the result of the Revolution, broken up and forced to intermarry with the *bourgeoisie*, the result was an increase in the population and additional vigor in the race. An old family in its decline may be rejuvenated and restored by intermarriage with a more vigorous, even if a coarser, stock or strain. The population of our cities is maintained by the constant influx of fresh blood from the rural districts.

The mixture of the European races, now so marked, has been going on from early prehistoric (Neolithic) times. The French population is highly composite. The Anglo-Saxon race is equally or still more so, and the American people so in a still more marked degree; the intermixture being the result of emigration from the countries of northern and central Europe. It is not only that the old mixes with new stock, but the latter comes from regions differing in soil, climate, etc. Intermarriages between the stocks or breeds or strains of the white race are happy in their effects, resulting in increased vigor and fertility; and so with the stocks of the yellow, brown, or black races. The same law prevails throughout the animal world; everywhere Nature abhors too close inbreeding.

Interracial Marriage. Miscegenation, or "métissage," is marriage between individuals of widely different races, i.e., a high and a low race or variety. Its effects are bad physically and morally, since the product, like mules or hybrids between species, is inferior to the higher though superior to the lower race; the result is that, when general, the higher race is pulled down, or

tends to degeneracy, while the lower is in a degree elevated. Hybrids, or half-castes, are notoriously inferior to either pure race, though so partly from social causes. The results, so apparent in human history, show that crosses are injurious between races too far removed in physical characters and constitution, or where living under remote climatic conditions. While marriages between black or other backward races and white races are markedly evil in their effects, unions between those nearer allied, such as those between the white race and the Japanese or the Polynesian or Malay or North American Indian, also tend to result in sterility; on the other hand, crosses between the yellow and brown races, and the brown and black, are apparently fertile, and the results not harmful.

In-and-in Breeding. The deleterious effects of self-fertilization, or of marriage between blood relatives, are recognized both by Darwin and by Wallace. Darwin found that certain plants which had been naturally cross-fertilized for many or all previous generations suffered to an extreme degree from a single act of self-fertilization. "Nothing of the kind," he adds, "has been observed in our domestic animals; but then one must remember that the closest possible interbreeding with such animals—that is, between brothers and sisters—cannot be considered as nearly so close a union as that between the pollen and ovules of the same flower."

Consanguineous Marriages. The bearings of the previous statements on this important subject are obvious. Yet the matter is involved in doubt, authorities differing. The popular notion is that marriages between first cousins result in disease, idiosyncrasy, insanity, sterility, etc. That the results are not, however, always deleterious is a matter of frequent observation. Darwin refers to his son's (G. H. Darwin) attempt to discover by a statistical investigation whether the marriages of first cousins are at all injurious, "although this is a degree of relationship which would not be objected to in our domestic animals." It appears from these and other researches that "the evidence as to any evil thus caused is conflicting, but on the whole points to its being very small." He concludes "that with mankind the marriages of nearly related persons, some of whose parents or ancestors had lived under very different conditions, would be much less injurious than that of persons who had always lived in the same place and followed the same habits of life. Nor can I see reason to doubt that the widely different habits of life of men and women in civilized nations, especially among the upper classes, would tend to counterbalance any evil from marriages between healthy and somewhat closely related persons."

Finally, to sum up the results thus far obtained, it appears, as concluded by Wallace, that a slight amount of crossing, attended by slight changes of the conditions of life, is beneficial; while extreme changes and crosses between individuals too far removed in structure or constitution are injurious. For the literature, consult many of the volumes under **EVOLUTION**.

CROSS-BUN. A small cake specially prepared for Good Friday and in many English towns cried about the streets on Good-Friday morning as "hot cross-buns." Good-Friday buns were appropriately marked with the cross; hence the name. The origin of the practice is obscure. Most probably it is a relic of some

heathen observance, to which the early Church gave a Christian significance.

CROSSCUT. A horizontal, or nearly horizontal, passageway driven between two levels, drifts, or underground workings in a mine. In coal mining crosscuts are often driven in the coal for ventilation, whereas in metal mines they are usually driven across the formation, at right angles to the strike, to prospect for or connect parallel veins.

CROSSE, ANDREW (1784-1855). An English physicist. He was born at Fyne Court, in the Quantock Hills, Somersetshire, and was educated at Bristol and Brasenose College, Oxford. He early devoted himself to the study of electricity and in 1807 he commenced experiments with the view of forming artificial crystals. These discoveries and investigations in electricity were described at the meeting of the British Association for the Advancement of Science, at Bristol, in 1836. A few months later, while experimenting with some highly caustic solution, out of contact with atmospheric air, there appeared, as if gradually growing from specks between the poles of the voltaic circuit, certain animals of the genus *Acarus*. Crosse never affirmed that he had developed animal life out of inorganic elements, but simply that under physical conditions he could make *Acarus* appear, and not otherwise. This discovery aroused such violent criticism that Crosse retired from the world and for some time neglected his researches; but later he published papers on *Mode of Extracting Metals from their Ores*; *On the Perforation of Non-conducting Substances by the Mechanical Action of the Electric Fluid*; and *On the Apparent Mechanical Action Accompanying Electric Transfer*.

CROSS-EXAMINATION. The examination of a witness on behalf of the party against whose interest he has been called and against whom he has given testimony. The object is to test the correctness of the testimony given, to disclose any prejudice, lack of intelligence, weakness of memory, or untruthfulness that may exist, and to break in any proper way the force of the direct examination. Greater latitude is allowed to counsel in cross-examination of an adverse witness than in adducing direct testimony for his own client. Thus, "leading questions"—i.e., those which in their form suggest or indicate the answer desired—are allowed in cross but not in direct examination. In the United States generally it is held that cross-examination should be limited to inquire into matters drawn out on the direct examination, and if counsel asks questions as to new matter he thereby makes the witness his own and cannot thereafter impeach his credibility.

Counsel are required to confine the questions on cross-examination to material and relevant matters, but the determination of the question whether the facts sought to be shown are material and relevant rests in the discretion of the court, and, when occasion seems to demand it, this discretion is liberally exercised, especially in cases of cross-examination of expert witnesses, where it is necessary to show the standing and ability of the expert. Previous mistakes in collateral matters not connected with the cause in issue have been allowed to be shown on this point.

The right to cross-examination should be exercised immediately after the examination in chief; but it is in the discretion of the court,

upon good reason shown, to allow the privilege at a later stage of the trial. Consult Wellman, *Art of Cross-Examination* (New York, 1904). See EVIDENCE; EXAMINATION; TESTIMONY; and authorities there cited.

CROSS-FERTILIZATION, IN PLANTS: See POLLINATION.

CROSS-FOX. A valuable variety of the American red fox, marked by a dark line along the back, crossed by one upon the withers, whence the name. See FOX.

CROSS KEYS. A post village in Rockingham Co., Va., about 20 miles northeast of Staunton. Here, on June 8, 1862, during the Civil War, an indecisive engagement occurred between 18,000 Federals, under General Frémont, and a part of Jackson's retreating army, numbering about 8000, under General Ewell, the latter withdrawing during the night to effect a junction with Jackson. Each side lost about 500. The engagement was a strategic success for the Confederates, in that it checked the pursuit by Frémont and prevented his joining with General Shields for a combined attack.

CROSSLEY, SIR FRANCIS (1817-72). An English philanthropist, born at Halifax, Yorkshire. He succeeded to the proprietorship of the Dean Clough carpet mills and accumulated a vast fortune. His many benefactions included the gift to Halifax of 21 almshouses in 1855 and an endowed public park, and to the London Missionary Society of £20,000. He was created a baronet in 1863 and published a lecture, *Canada and the United States*, in 1856.

CROSSOPTERYGII, *krōs-sōp'tēr-i-jī* (Neo-Lat. nom. pl., from Gk. *krōssos*, *krōssos*, fringed + *pterygion*, *pterygion*, dim. of *πτερυξ*, *pteryx*, wing). An order of ganoid fishes, numerous in former ages, but surviving only in the ganoid-like genera *Polypterus* (see BICHR) and *Catamochthys*. They are described as "Teleostomi, in which the pectoral fin consists of a rounded basal lobe, supported by endoskeletal structures and fringed by dermal rays. There are no branchiostegal rays. The vertebral column is well ossified, and the caudal fin is diphycceral. The pelvic fins are abdominal. A spiral valve and a conus arteriosus are present, and the optic nerves form a chiasma."

CROSS RIVER. See CALABAR.

CROSS STONE. See MACLE.

CROSSWELL, *krōz-wēl*, EDWIN (1797-1871). An American journalist and leader in Democratic politics as a member of the Albany Regency (q.v.). He was born at Catskill, N. Y., began his journalistic career on the *Catskill Recorder*, a journal established by his father, and in 1824 became editor of the *Albany Argus*, which he made the official organ of his party in the State. He was also State printer from 1824 to 1840 and from 1844 to 1847. In 1854 he gave up journalism and went into business in New York City. Crosswell was the great antagonist of Thurlow Weed and exerted powerful influence by his editorial utterances in both State and national politics.

CROSSWELL, HARRY (1778-1858). An American journalist and clergyman, born at West Hartford, Conn. In 1802 he became editor of the *Balance*, a Federalist newspaper, at Hudson, N. Y., and later of the *Wasp*. In the latter he charged Jefferson with paying Callender to defame Washington. He was sued for libel and defended by Alexander Hamilton, whose plea in this case Kent called "the greatest forensic effort

Hamilton ever made." In 1814 Crosswell took orders and in 1815 became rector of Trinity Church, New Haven, Conn. He was the author of *The Young Churchman's Guide*; *Manual of Family Prayers* (1857); *Guide to the Holy Sacrament* (1807).

CROTALARIA (Neo-Lat. nom. pl., from Gk. *κρόταλον*, *krotalon*, rattle). A genus of plants of the family Leguminosae, deriving its name from the inflated pods in which the seeds rattle when ripe. The species, about 250 in number, are annual, perennial, and shrubby plants, natives of the temperate and tropical parts of the world. (See Plate of CRANBERRY.) Many of them have long, straight, slender stems and branches, and some of these yield valuable fibre, particularly the Sunn (q.v.), or Sunn hemp of India, *Crotalaria juncea*, an annual species, the fibre of which is now an important article of commerce. Jubulpor hemp, also an important fibre, and regarded as stronger than Sunn, is the produce of *Crotalaria tenuifolia*, usually considered a variety of *Crotalaria juncea*, a perennial species about 9 feet high, a native of the south of India, which, when growing in abundant space, throws out many branches, but, when sown thick, grows with little branching. *Crotalaria burhia*, which naturally grows in very arid places, is also cultivated in Sindh for its fibre. There are a dozen species native of the United States, one of which, *Crotalaria sagittalis*, and perhaps others, are reputed to be injurious to horses, causing what is termed "crotalism," a disease something like loco (q.v.).

CROTALIDÆ (Neo-Lat. nom. pl., from Gk. *κρόταλον*, *krotalon*, rattle). A family of venomous serpents, the pit vipers, viper-like in form, but distinctively characterized by the presence of a deep pit on each side of the face between the nostril and the eye. It includes the American rattlesnakes, moccasins, and copperheads and some Asiatic species. See RATTLE-SNAKE.

CROTALISM. See CROTALARIA.

CROTAPHYTUS. See COLLARED LIZARD.

CROTCH, WILLIAM (1775-1847). A distinguished English composer, born at Norwich. He was quite as precocious as Mozart. When little more than three years old he could play "God Save the King" almost throughout with chords, and could detect in a moment what note was struck and in what key music was composed. When only 22, Crotch was appointed professor of music in Oxford University, and the degree of doctor of music was conferred upon him. In 1822 he obtained the principalship of the Royal Academy of Music. He composed much for the organ and piano, as well as many glees. Among several oratorios which he wrote, two, *Palestine* (1812) and *The Captivity of Judah* (1834), are especially noteworthy. He died at Taunton, England.

CROTCH'ET. A musical term used in England to denote the quarter note (♩). In France the *crochet* denotes the eighth note (♪). The semiminima of the older notation (see MENSURABLE MUSIC) was called in Italy *crocheta* and was written as an open note with one hook (♩). When later on the larger values of notes were abandoned and all notes of lesser value were written black, the French applied the old name to the *shape*, the English to the *value*, of the note.

CROTHERS, KRÜTH'ERZ, SAMUEL MCCORD (1857-). An American clergyman and essayist, born at Oswego, Ill. He graduated from Princeton in 1874 and from the Union Theological Seminary. After holding several charges in the West, he entered the Unitarian ministry, and was settled in Brattleboro, Vt. He was called in 1894 to the First Parish of Cambridge, Mass., where he became also one of the preachers to Harvard University. His essays are of the familiar type, humorous, shrewd, and discreetly communicative, yet proceeding from a ripe and cultured mind, stored with literary lore, and of a scholarly type. They are happiest, perhaps, in dealing with the intellectual weaknesses and frailties of the time and are often pleased to treat with refreshing irony European conditions, which, from the American standpoint, do not fail in humorous appeal. His works include: *The Gentle Reader* (1903); *The Pardoner's Wallet* (1905); *The Endless Life* (1905); *By the Christmas Fire* (1908); *Among Friends* (1910); *Humanly Speaking* (1912); *Three Lords of Destiny* (1913).

CROT'ON (Neo-Lat., from Gk. κρότων, or κρότων, *krotón*, tick, shrub bearing the castor berry, which was thought to resemble a tick). A genus of plants of the family Euphorbiaceae. The species, about 700 in number, are mostly tropical or subtropical trees or shrubs, a few herbaceous. Some of them possess in a very high degree the acrid properties so characteristic of the family to which they belong. Among these the most important is the purging croton (*Croton tiglium*), a small tree, a native of India and the more easterly tropical parts of Asia. The leaves are extremely acrid; the wood in a fresh state is a drastic, and in a dried state a more mild purgative; and the seeds (*croton seeds*, or *tilly seeds*) are an extremely powerful drastic purgative, formerly much employed in Europe, but latterly disused on account of violence and uncertainty of action, although still valuable as yielding croton oil (q.v.). They are oval, or oval oblong, about the size of field beans. The oil is obtained mostly by expression, and partly by treating the cake with alcohol. Very different properties are found in the species which yield cascarilla (q.v.) and copalche (q.v.) barks, to which a great resemblance exists in the barks of a number of species, natives chiefly of South America. Other species are still more aromatic, and some delightfully fragrant, containing in great abundance a thickish balsamic sap. The sap of *Croton gratissimus* is much employed as a perfume and cosmetic at the Cape of Good Hope; that of *Croton organifolius* is used in the West Indies as a substitute for balsam of copaiba; that of *Croton flaccens*, also West Indian, furnishes *cau de Mantes* by distillation; and the balsamic sap of some South American species is dried and used as incense. *Croton aromaticus*, which grows abundantly in Ceylon, is an important lac tree. The plants cultivated by florists in hothouses as crotons belong to the genus *Codiaeum*. See Plate of CYPRUS.

CROTONA, or **CROTON** (Lat., from Gk. Κρότων, *krotón*). A Greek colony in south Italy, on the east coast of Bruttium, founded probably about 710 B.C. by Achæans. Situated near a good harbor and in a fertile territory, Crotona rapidly became wealthy and was famous for its Olympian victors, especially the

great athlete Milo (q.v.). About 530 B.C. the city became the home of Pythagoras (q.v.). But soon after the destruction of Sybaris (510 B.C.) a reaction set in, and the Pythagoreans were expelled. The power of Crotona sank rapidly during the fifth and the fourth centuries B.C. It was captured by Dionysius the Elder of Syracuse, and later by Agathocles, and in the war between Pyrrhus and the Romans was plundered and nearly destroyed. It recovered somewhat, but suffered severely in the Second Punic War, when it was for three years the winter quarters of Hannibal. Though made the seat of a Roman colony in 194 B.C., it was never after a place of importance. The modern name is Cotrona (q.v.). Pop. (commune), about 9000.

CROTON AQUEDUCT. See **AQUEDUCT** for descriptions of both the old and the new Croton Aqueduct. See Plate of DAMS.

CROTON BUG. See **COCKROACH**.

CROTON EL'EUTERIA. See **CASCARILLA**.

CROTON OIL. The fixed oil obtained by expressing the seeds of the *Croton tiglium*, cultivated in India and the Philippine Islands. It is a viscid liquid, varying in color from a pale yellow to a reddish brown or deep sherry. It is insoluble in water and but sparingly soluble in alcohol, ether, carbon disulphide, and many other organic solvents. It has an acrid taste and an unpleasant fatty odor. It contains *tiglic acid*, $C_5H_9O_2$, *crotonol*, $C_{15}H_{25}O_4$, and the glycerides of several fatty acids. Croton oil is a powerful irritant. When rubbed upon the skin, it produces rubefaction and pustular eruption. It is now rarely used in medicine, being prescribed for the purpose of stimulating the skin in alopecia, and internally to relieve very obstinate constipation.

CROTON RIVER. A river of New York, about 60 miles long, and formed by the confluence of three branches, the East, the Middle, and the West, which rise in the southern part of Dutchess County, flow in a southerly direction, and unite near the southern boundary of that county, whence the main stream follows a southwesterly course through Westchester County, and empties into the Hudson River at Croton Point, 30 miles north of New York. Its principal tributaries are the Titicus, Cross, Kisco, and Muscoot rivers. Its catchment area is about 33 miles north and south by 11 miles east and west, lying almost entirely in New York, and involving about 360 square miles above the new Croton dam. Within this area are about 30 lakes and ponds, many of which are utilized as natural storage basins. For many years New York City (i.e., the present Borough of Manhattan) was dependent chiefly upon this source for its water supply. For an account of the city's enlarged water-supply system, see **AQUEDUCT**.

CROUCH, FREDERICK NICHOLLS (1808-96). An Anglo-American musician, born in London. He came of a musical family and was himself remarkably precocious. He studied at the Royal Academy of Music and with Boehsa, and when only nine years old was a 'cellist in the Royal Coburg Theatre. Subsequently he was in the orchestras of Queen Adelaide and at Drury Lane Theatre, after which he became a teacher and singer in Plymouth. In 1849 he came to the United States, acting in various capacities as musical director, teacher, and chorister in New York, Boston, Philadelphia, Washington, and

Baltimore. He died in Portland, Me. His compositions were almost exclusively songs and comprise "Kathleen Mavourneen," "The Soldier's Grave," "The Emigrant's Lament." He also wrote two operas, *Sir Roger de Coverley* and *The Fifth of November*.

CROUP (Scotch *croupe*, *crope*, to croak, make a harsh noise). Since the discovery of the cause of diphtheria, it has been found that there are two forms of disease formerly known as croup: (1) spasmodic, or false croup, and (2) membranous croup, which is diphtheria of the larynx. False croup is caused in feeble or ill-fed children, or in those who have a catarrhal tendency, by exposure to cold and wet, digestive disturbances, or, in some cases, the gripe (q.v.). The child has a running from the nose and a cough; he awakens coughing hoarsely, with noisy and labored breathing or gasping, with every appearance of suffocation, the face becoming red or purplish, and tears starting from the eyes. The attack lasts from a half hour to five or six hours, and then relief comes in a loose cough, abatement of the fever, and free perspiration. The attack may be repeated on succeeding nights. No membrane is coughed up. The treatment consists of inhalation of warm moist air from a teakettle placed under a sheet thrown over the child's bed; frequent draughts of warm milk; and a dose of a half teaspoonful of syrup of ipecac, repeated every 15 minutes till vomiting occurs.

Membranous croup is caused by the bacillus of diphtheria (q.v.), and is very dangerously contagious as well as largely fatal. The symptoms are much the same as in false croup, except that they are steadily progressive; the child is generally drowsy for a few hours before the difficulty in breathing and the cough begin, and after a time becomes exceedingly restless, the lips and face become blue, pieces of membrane are coughed up, coma and possibly convulsions follow, and death occurs unless relief is obtained. Relief from suffocation may be obtained in desperate cases by the use of the tracheotomy tube. This is a metal or hard rubber tube inserted into the windpipe below the larynx by a surgeon, through an incision in the neck. More generally relief is afforded by the use of the intubation tube invented by Dr Joseph O'Dwyer, of New York, which is passed down the throat and between the vocal cords. These procedures do not, however, check the disease, for which antitoxin (q.v.) is the only effective remedy. See DIPHTHERIA.

CROUTH. See CROWD.

CROW (AS. *cracc*, OHG. *chrawa*, *chraja*, Ger. *krahe*, crow, from AS. *cræcan*, OHG. *chrajan*, Ger. *krahen*, to crow; probably onomatopoeic in origin). A bird of the genus *Corvus*, the type of the family Corvidæ. The crows are a widely distributed group of birds, found in nearly all parts of the world, but especially in the Northern Hemisphere. The largest species of the genus is the raven; the rook and the jackdaw of England also belong to it. Crows are always more or less black, frequently wholly so, but differ from each other not only in color, but especially in size and in the amount of space at the base of the bill, which is bare of feathers. All are smaller than the raven, but most of them are more than 15 inches in length. They are omnivorous, eating almost anything edible, and some species live largely on fish. All are intelligent to a high degree, and many stories are cur-

rent regarding their avoiding danger and communicating with each other. They are easily domesticated. Most of the species are more or less gregarious, at least at certain seasons of the year, and frequently resort in incredible numbers to certain favorite places of woodland to roost at night.

Three species of crow occur in the United States, besides the two ravens. The common crow (*Corvus brachyrhynchos*, or *americanus*) is generally distributed over North America, but is most abundant in the East and is apparently wanting from certain parts of the Rocky Mountain region, where ravens are common. Although it formerly had a bad reputation as a corn thief, and is known to be guilty not only of stealing corn, but even of stealing eggs and killing birds (including poultry), it is now recognized as a really beneficial bird and a true friend of the farmer, because of the vast number of injurious insects which it destroys. It was primitively confined mainly to the Eastern coast belt, but has steadily progressed westward with the advance of civilization, as the raven has correspondingly disappeared.

The fish crow (*Corvus ossifragus*) frequents the coast and the southern rivers of the United States (See FISH CROW.) The "jabbering" crow (*Corvus jamaicensis*) of the Blue Mountains of Jamaica is remarkable for the resemblance of its voice to human speech, which some of the other species of this genus may be taught to imitate. The small, glossy crow of India and Ceylon (*Corvus splendens*) frequents the towns, feeding on offal, and boldly entering rooms through open windows to snatch some morsel from the dinner table, these birds, called "hooded crows" in English India, are a nuisance by their boldness and thievish ways about camps and villages.

CROW (translation of the Hidatsa name of the tribe *absaroka*, hawk). A warlike nomadic tribe of Siouan stock, formerly roaming over the upper Yellowstone region of Wyoming and Montana and now gathered upon a reservation in the southeastern part of the latter State to the number of about 1750. They were formerly almost constantly at war with all their neighbors, particularly the Sioux, but have uniformly remained at peace with the whites, frequently furnishing a contingent of scouts against the hostile tribes.

In language the Crow are most closely related to the Hidatsa, with whom they also share certain cultural features, notably a clan system with maternal descent, which is, however, combined in both tribes with social usages dependent on the father's clan. The Crow had a series of ungraded military societies, and still engage in the ceremonial planting of a sacred tobacco plant under the auspices of esoteric organizations.

Consult: Curtis, *The North American Indian*, vol. iv (Cambridge, 1909); Lowie, *Social Life of the Crow Indians* (New York, 1912); id., *Societies of the Crow, Hidatsa and Mandan Indians* (ib., 1913).

CROWBERRY, or **CRABEBERRY** (so called from its black color) (*Empetrum nigrum*). A small procumbent shrub, of the family Empetraceæ, a native of northern latitudes, abundant in moors and highlands. The family consists of a few heathlike shrubs. The berries of the crowberry are nearly black, surround the branches in crowded clusters, and each contains six to nine bony seeds and a watery,

acidulous juice, which is sometimes thought to be refreshing; but they are generally little esteemed. A fermented or vinous liquor is prepared from them in some northern countries. They are a favorite food of game. A second species, *Empetrum rubrum*, of southern South America, differs little from the northern plant, except in having red berries.

CROW BLACKBIRD. See GRACKLE.

CROWD (AS. *croda*, *gecrod*, throng; of unknown origin), or MOB. In the popular sense, an aggregation of individuals, regardless of their character or the purposes which brought them together. The psychological signification of a crowd is different. The aggregation becomes a crowd only "when the sentiments and ideas of all the persons in the gathering take one and the same direction, and their conscious personality vanishes." A half dozen individuals gathered together may become a crowd more easily than hundreds assembled accidentally.

The most distinctive characteristic of a crowd is that the individuals composing it do not think and act as each one would think and act independently. Back of the avowed causes of our acts are unconscious motives or forces that defy investigation, and these are the mainsprings of crowd activity. They are the common characteristics of the race, and it is in these points that people are more alike than in the acquired characteristics which result from education. It is owing to the fact that these forces which are requisite for crowd or mob activity are the primitive ones, that crowds are incapable of rising above very mediocre intellectual attainments. This also explains why the crowd descends in the scale of civilization below the average individuals composing it. If this were not true, it would be impossible to explain the conduct of otherwise respectable persons at lynchings and the degrading forms of torture imposed by them.

The causes which determine the appearance of the characteristics of the crowd are: (1) a sentiment of invincible power; (2) suggestion; and (3) contagion. Through the mere force of numbers, and also through the irresponsibility of the individual of the crowd, a feeling of invincible power takes possession of him. Nothing is permitted to stand between him and the realization of his aims. On this account the soldier in battle, acting under a common impulse, is braver and stronger than he would be otherwise. By means of suggestion contagion in the crowd is produced; the individuals are more or less in a hypnotic state; and the individual will and personality disappear in a common purpose or aim.

Crowds are not premeditative; they are impulsive and mobile. Aroused one minute to acts of generosity and heroism, they may descend the next to acts of extreme violence and torture. They are credulous, believing things wholly incomprehensible to those outside of crowd influence.

Much difference of opinion prevails concerning the rôle which mob action is to play in the civilization of the future. Gustave Le Bon, *The Crowd* (Eng. trans., London, 1900), asserts that "while all our ancient beliefs are tottering and disappearing, while the old pillars of society are giving way one by one, the power of the crowd is the only thing that nothing menaces, and of which the prestige is on the increase. The age we are about to enter will in truth be the era

of crowds." Professor Baldwin, *Social and Ethical Interpretations* (New York, 1897), differs widely from this point of view, claiming that "the attempt to build a fruitful conception of society upon the actions of the crowd under the influence of these imitative suggestions, seems to be crude and unphilosophical in the extreme." Consult Lee, *Crowds: A Moving Picture of Democracy* (New York, 1913). See SOCIOLOGY; SOCIAL PSYCHOLOGY.

CROWD, kroud, dial. kroöd, **CROUTH**, or, Welsh, **CRWTH**, kroöth (from Welsh *crwth*, Gael. *crut*, OIr. *crot*, violin; ultimately identical with Welsh *crwth*, bulge, on account of the rounded shape of the instrument). A musical bow instrument, of Welsh or Irish origin, and probably the oldest European instrument of that class. It is mentioned as a *chrotta* by Venantius Fortunatus in 609, and from then till the beginning of the nineteenth century, when it was still in use in Ireland, Wales, and Brittany, it seems to have preserved its form. But on the Continent the instrument underwent radical changes. Originally its body was square and was prolonged by two parallel arms, connected at the end by a crossbar. From this bar a narrow finger board extended to the middle of the sound box. The strings—originally three, later six in number—were stretched from the top of the parallel arms to the bottom of the sound box and were supported by a bridge placed between two sound holes. For illustration, see *MUSICAL INSTRUMENTS*. Consult F. W. Galpin, *Old English Instruments of Music* (London, 1911).

CROW DUCK, or SEA CROW. A coot.

CROWE, CATHERINE STEVENS (c1800-76). An English author. She was born at Borough Green, Kent, and lived chiefly in Edinburgh. Her principal work, entitled *The Night Side of Nature* (1848; new ed., 1904), has perhaps never been surpassed for weirdness of conception. In her novels, among which are *Adventures of Susan Hopley* (1841), *Lilly Dawson* (1847), and *Lanny Lockwood* (1854), she showed much skill and ingenuity in the development of the plot.

CROWE, EYRE (1824-1910). An English painter, born in London. He was a pupil of William Darley and later of Paul Delaroche in Paris. He traveled in the United States as amanuensis to Thackeray in 1852 and remained until 1857. In 1876 he was elected an associate of the Royal Academy. His painting is somewhat dry and hard and his color poor, but he treats his subjects with great care and feeling. His pictures include "Goldsmith's Mourners" (1863); "Nelson Leaving England" (1888); "The Brigs of Ayr" (1894); "The Gipsy's Rest" (1897); "James II at the Battle of La Hogue" (1898); "Napoleon's Abdication" (1902). He published *With Thackeray in America* (1893).

CROWE, SIR JOSEPH ARCHER (1825-96). An English journalist. He was born in London and began his journalistic career as foreign editor of the *Daily News*. During the Crimean War he was the correspondent of the *Illustrated London News*, and he acted in the same capacity for the *Times* during the Indian Mutiny. While in India he was also director of the Art School at Bombay from 1857 to 1859. He was Consul General at Leipzig in 1860-72 and at Düsseldorf in 1872-80. In the latter year he became commercial attaché in Berlin, and two years later attaché in Paris; and was secretary and protocolist to the Danubian Conference, London (1883), and British Plenipotentiary to the Sa-

moan Conference, Berlin (1889). He wrote, with G. B. Cavalcaselle, *The Early Flemish Painters* (1857) and *History of Painting in Italy* (5 vols., 1864-71).

CROWELL, krŏ'el, EDWARD PAYSON (1830-1911). An American scholar and educator, born at Essex, Mass. He graduated at Amherst College in 1853, at Andover Theological Seminary in 1858, and in 1859 was licensed to preach by the Congregational church. From 1858 to 1864 he was instructor in German and professor of Latin at Amherst. In 1864 he was appointed to the chair of Latin languages and literature and in 1880-94 was dean. His publications include editions of Latin classics, such as those of the *De Senectute* and *De Amicitia* of Cicero (1871), the *De Officiis* of Cicero (1873), the *Andria* and *Adelphoe* of Terence (1874), and the *De Oratore* of Cicero (1879). He also translated and edited Bender's *Grundriss der römischen Literaturgeschichte* (1876) under the title, *A Brief History of Roman Literature* (1880), jointly with H. B. Richardson prepared a useful volume of *Selections from Latin Poets*, with notes (1882), and wrote *A Cue to the Prose Writings of the Silver Age* (1897).

CROWELL, JOHN FRANKLIN (1857-). An American economist, born in York, Pa., and educated at Yale, Columbia, and Berlin universities. He was principal of Schuylkill Seminary, Fredericksburg, Pa., for several years; president of Trinity College, N. C. (1887-94), head of the department of economics and sociology at Smith College (1895-97); and in 1900-04 an expert of the United States Industrial Commission and also expert on internal commerce for the Bureau of Statistics in the Treasury Department. In 1906 he became editor of the *Wall Street Journal*, New York City, and in 1910-11 was president of the American Civic Alliance. His publications include: *The Logical Process of Social Development* (1898); *Internal Commerce of the United States* (1902); *Report to War Department on Deepening the Mississippi River* (1903); *Trunk Line Differentials* (1904); *Competition, Fair and Unfair* (1913).

CROWFIELD, krŏ'fēld, CHRISTOPHER. A name which Mrs. Harriet Beecher Stowe sometimes used as a pseudonym.

CROWFOOT. See RANUNCULUS.

CROWFOOT FAMILY. See RANUNCULACEAE.

CROW GARLIC. See ALLIUM.

CROWLEY, krŏ'li. A city and the county seat of Acadia Parish, La., 135 miles west by north of New Orleans, on the Louisiana Western, the New Orleans, Texas and Mexico, and the Opelousas, Gulf, and North Western railroads (Map: Louisiana, C 3). Its principal industries are the cultivation of rice and rice milling. A rice-growing experiment station has been established here under State and Federal control. Petroleum in large quantities is produced in the vicinity. Settled about 1887, Crowley was incorporated two years later and grew rapidly. The government is administered by a mayor, elected biennially, and a council. The city contains an Odd Fellows Home and owns and operates its water works, electric-light plant, and sewerage system. Pop., 1890, 420; 1900, 4214; 1910, 5099.

CROWN (MDutch *krune*, *krone*, Icel. *krúna*, Ger. *Krone*, OHG. *corōne*, *corōna*, OF. *corone*, Fr. *couronne*, from Lat. *corona*, crown, Gk. *korōnē*, *korōnē*, curved end of a bow; connected

with Gael. *crúinn*, Welsh *crwn*, round, Lat. *curvus*, curved). The crown, as we understand it to-day, resembles in some degree the fillets, wreaths, and garlands which were worn among the Greeks as an emblem of office (in the case of the archons), as a distinction for the victors in the public games, or for citizens who had rendered exceptional service to their country. The Romans used them chiefly as rewards for valor. The most highly prized was the *corona obsidionalis*, made of grass or wild flowers, bestowed by a beleaguered garrison on the general who rescued them. Next came the *corona civica*, of oak leaves and acorns, as a reward to any soldier who had saved the life of a Roman citizen in battle; a place next to the senators was reserved for the wearer at public spectacles, and the whole assembly rose at his entrance. The *corona muralis*, a golden ring surmounted with turrets or battlements, was bestowed on the man who first scaled the wall of a besieged city; and the *corona triumphalis*, of three kinds, upon a general who obtained a triumph. There were other crowns not honorary, but emblematical, and regulated not by law, as were the former ones, but by custom. Of these the most important were the *corona sacerdotalis*, worn by priests and others engaged in sacrifice; *corona funebria*, or *sepulchralis*, with which the dead were crowned; *corona convivalis*, worn on festive occasions by banqueters; *corona nuptialis*, or bridal wreath; and *corona natalitia*, a chaplet suspended over the door of a house in which a child was born.

As the emblem of sovereignty in modern Europe, the crown was borrowed rather from the diadem than from the above-mentioned crowns. The Roman emperors are represented as wearing either the diadem, the laurel crown (a simple emblem of glory), or the radiating crown, probably of Eastern origin, which symbolized among the Romans the deification of the emperors. From the time of Constantine the Great (306-337) the diadem was the established emblem of Imperial power; but it was supplanted under Justinian (527-565) by the crown, called *stemma*, a slight elaboration upon the golden fillet; and this in turn was replaced by still more elaborate crowns, until the crown with arches became the accepted form. The ordinary type of the Imperial crown of the Middle Ages, as assumed in imitation of the Greek emperors by Charles the Bald (840-877), is found in an illuminated manuscript at Munich representing the Emperor Henry II (1002-24) crowned by Christ. The crown actually used at the coronation of many subsequent emperors, and now preserved in the Imperial treasury in Vienna, is a round cap surrounded by eight small shields with semicircular tops alternately adorned with precious stones and with pictures. It is surmounted by a small cross resting on an arch inscribed "Conradus Dei gratia Romanorum imperator augustus" (Conrad II, 1024-39). The present Austrian Imperial crown is of the style adopted by the Emperor Maximilian II in 1570. It is cleft in the centre so as partly to resemble a mitre; the golden circlet is jeweled and adorned with fleurs-de-lis and surmounted by a cap, above which rises a single arch surmounted by a cross. The new German Imperial crown resembles the old crown of Charlemagne and consists of eight shields ornamented with precious stones; the larger shields show a cross made of precious stones, the smaller the Imperial

eagle set with diamonds; above it rise four arches surmounted by a cross. The royal crown of Great Britain is a circle of gold enriched with precious stones and pearls and heightened by four crosses patée and four fleurs-de-lis alternately; from these rise four arches which close under a mound ensigned with a cross patée. See *TIARA*; *CORONET*.

So entirely was the crown regarded as the symbol of sovereignty that the word came to be used as synonymous with the monarchy, the state, and matters under the control of the executive authority. Thus we speak of crown lawyers, crown lands, etc., the term having no connection with the sovereign personally.

CROWN and HALF CROWN (so called from the crown which generally appears on the reverse). English silver coins since 1551, before which date they were made of gold. The crown, which is the five-shilling piece, is worth approximately \$1.20 in United States currency.

CROWN, ORATION ON THE. See *DE CORONA*.

CROWN DEBTS. In English law, all debts due to the crown, which are on record, or evidenced by a bond or other specialty, and also those due from accountants to the crown on account of moneys received for the use and benefit of the crown. Formerly the lands of the debtor were subject to a lien for the amount due, even in the hands of an innocent purchaser for value without notice of the lien, if they were conveyed after the debt became due. At present the lien is not binding on a *bona fide* purchaser or mortgagee for value, unless a writ of execution has been issued and registered before the execution of the mortgage or conveyance.

Simple contract debts have no such lien; but the crown has in all cases preference over private creditors in the distribution of the estates of bankrupts and deceased persons. See *ADMINISTRATION*; *DEBT*; *PREROGATIVE*; *EXCHEQUER*. Consult *Prideaux, Law of Judgments and Crown Debts, as they Affect Real Property* (4th ed., London, 1854).

CROWNE, JOHN (c.1640-c.1703). An English dramatist. He began his literary career with *Pandion and Amphigenia* (1665), interesting as one of the very few English heroic romances in imitation of Scudéry. His contemporary reputation as dramatist was gained by *The Destruction of Jerusalem*, in two parts (produced in 1677). His comedy *Sir Courtly Nice* (produced in 1685) held the stage through the eighteenth century. His numerous other plays have only slight interest. Consult *Dramatic Works* (4 vols., Edinburgh, 1873).

CROWN GALL. A very destructive disease that attacks nearly all kinds of fruit trees, grapes, almonds, walnuts, blackberries, raspberries, poplars, and chestnuts, frequently killing them. It exists in two forms—crown gall proper, which is described below, and hairy root, characterized by numerous thin fibrous roots. The exact relation between the two forms has not been positively determined. The point of attack is at the crown of the roots where the roots and stem join, the galls formed on young trees being half an inch or more in diameter. When young, they have the color of the young roots, but later they are considerably darker. They increase with the age of the tree, becoming as large as a man's fist or even larger. When small, they are soft masses of irregular fibres, and when older they exhibit concentric rings in cross section. On account of the deep wounds

and the attack made upon the vitality of its host the tree is frequently killed, and whole orchards are reported in which every tree has succumbed to this cause. The disease is widely distributed, being known in Europe, in many parts of the United States, and recently reported from New Zealand. The more common cause of crown gall is the bacterium, *Bacterium tumefaciens*. This organism has been repeatedly isolated from galls on many kinds of plants and galls produced by the inoculation of sound plants. Annual inspection of the trees, cutting off all galls and coating the cut surfaces with a paste made of copper sulphate and lime, is the most efficient protection known.

A crown gall of alfalfa that is rather common in parts of Europe and has been reported in this country is due to the fungus *Urophlyctis alfalfa*.

CROWN GLASS. The method of blowing soda-lime glass in which the original balloon is flattened, crown-shaped. A steel rod tipped with molten glass is now attached opposite to the blowpipe, which latter is then removed. By rapidly revolving the rod on a horizontal axis opposite the large opening of the glass furnace, the mass of glass softens and spreads out into a disk, thick at the centre and thinning towards the edges. The limit of the diameter of these disks is about 4 feet. On cooling and annealing, small windowpanes may be cut from the disk, leaving the irregular centre or "bull's-eye." This type of glass is no longer made in quantity except for art work, where it retains its place on account of its peculiar brilliant surface.

CROWN IMPERIAL. See *FRITILLARY*.

CROWNINSHIELD, ARENT SCHUYLER (1843–1908). A United States naval officer, born at Seneca Falls, N. Y. He graduated at the United States Naval Academy in 1863, was a participant in both of the attacks on Fort Fisher (December, 1864, and January, 1865), and in 1868 attained the rank of lieutenant commander. His further promotions were to the rank of commander (1880) and captain (1894). He became chief of the Bureau of Navigation of the Navy Department in 1902, during the Spanish-American War was a member of the Board of Naval Strategy, and was retired in 1903. He immediately preceded Capt. C. D. Sigbee in the command of the battleship *Maine*.

CROWNINSHIELD, FREDERIC (1845–). An American decorative painter and writer. He was born in Boston, graduated at Harvard College in 1866, and studied abroad 11 years, under Rowbotham in London, Couture in Italy, and Cabanel in Paris. From 1879 to 1885 he was an instructor in the Boston Art School, after which he removed to New York, where he was president of the Fine Arts Federation from 1900 to 1909. In 1911 he was appointed director of the American Academy in Rome. He devoted himself principally to mural decoration, excelling particularly in the difficult work of harmonizing color, planning arrangement, and designing borders and arabesques, and contributed very materially to the development of this branch of art in America. His stained-glass windows and landscapes also deserve mention. His writings include: *Mural Painting* (1887); *Pictoris Carmina* (1900); *A Painter's Moods* (1902); *Tales in Metre* (1903).

CROWNLANDS. The English sovereign was at one time not only the nominal owner,

as lord paramount, of all the lands in England, but was also in his royal capacity one of the great landowners in the kingdom. He was the lord of many manors, and in him were vested most of the wastes, forests, and common lands throughout the realm. The ancient demesne lands of the crown are now contracted within narrow limits, having been almost entirely granted away to subjects. King William III so impoverished the crown in this manner that an act was passed (1 Anne, c. 7, § 5), the effect of which and of subsequent statutes is that all grants or leases from the crown of royal manors, or other possessions connected with land, for a period exceeding 31 years, are void. At a much earlier period (1455, c. 41) a Scottish statute had rendered the consent of Parliament necessary to the alienation of the property of the crown; but neither it nor the subsequent statutes which were passed with a similar object succeeded in checking the practice. Since the beginning of the reign of George III the English sovereign surrenders during his life the hereditary revenues derived from the crownlands in exchange for a fixed civil list granted by Parliament. The control of crownlands is now vested in commissioners appointed for that purpose, called the commissioners of woods, forests, and land revenues. These restrictions do not apply to estates purchased by the sovereigns out of the privy purse, or coming to the sovereign, his heirs, or successors, by descent or otherwise, from persons not being kings or queens of the realm; for, although there is no marked line drawn between the proprietary rights which the King has as King and those which he has in his private capacity, and there are no lands which belong to the nation or state as a personified body, yet a distinction is made between the lands of ancient demesne and those coming by modern title, by which the alienation of the former is restricted and that of the latter left free. Consult Cox, *Institutions of the English Government*, etc. (London, 1863), and Stephen, *New Commentaries on the Laws of England* (14th ed., London, 1903). See CIVIL LIST, DEMESNE; FEUDALISM.

In Austria the term "crownland" is applied to the various territorial divisions into which that country is divided.

CROWN POINT. A city and the county seat of Lake Co., Ind., 39 miles south-southeast of Chicago, Ill., on the Chicago and Erie, and the Pittsburgh, Cincinnati, Chicago, and St. Louis railroads (Map: Indiana, B 1). Among the noteworthy features are the county jail and almshouse, the juvenile home for delinquents, and the Carnegie library. It has grain elevators, machine shops, wagon works, and a shirt and overall factory. Pop., 1900, 2336; 1910, 2526.

CROWN POINT. A town in Essex Co., N. Y., on the west shore of Lake Champlain, on the Barge Canal, and on the Delaware and Hudson Railroad, 110 miles north by east of Albany (Map: New York, G 2). It contains the Hammond library and chapel, Congo Park, and a memorial lighthouse erected to the memory of Samuel de Champlain. The town manufactures building material and staves and has sash and door factories, grain elevators, spar mills, and a creamery. In the vicinity are deposits of graphite and iron. Pop., 1900, 2112; 1910, 1690. Crown Point was first visited by Champlain, who, on July 5, 1609, fought and defeated the Iroquois Indians here. In 1714 it became an

important English trading station. About 1781 the French built upon the site Fort St. Frederic, which, in spite of hostile English expeditions directed against it in 1755 and 1756, they held until 1759, when it was partly destroyed after being abandoned by Montcalm and Dieskau, who returned to the defense of Quebec. Lord Jeffrey Amherst then took possession and during the winter of 1759-60 began the erection of Fortress Crown Point, the ruins of which still remain, and which, though never completed, ultimately cost fully \$10,000,000. On May 11, 1775, Seth Warner, at the head of a company of "Green Mountain Boys," captured the fort, then garrisoned by only 12 men. In 1777, on the approach of General Burgoyne, it was temporarily abandoned by the Americans. The grounds containing the ruins of Forts St. Frederic and Crown Point were presented to New York State in 1910 for a public park and reservation.

CROWN SOLICITOR. The solicitor to the Treasury, who, in state prosecutions in England, acts as solicitor for the crown in preparing the prosecution. In Ireland there are crown solicitors attached to each circuit, whose duties correspond in some degree to those of the procurator fiscal and crown agent in Scotland. In England there are no analogous local officers, such prosecutions being conducted by solicitors representing the parish or by private parties.

CROW PHEASANT, *fézant*. See COUCAL.
CROW/QUILL, ALFRED. See FORRESTER, ALFRED HENRY.

CROW SHRIKE. See PIPING CROW.
CROW'S NEST. A perch for the lookout man of a vessel. It is placed on the foremast at as great a height above the deck as is found desirable; protection from the weather is afforded by a platform surrounded by canvas.

CROW STEP. See CORRIE STEPS.
CROWTHER, krou'thēr, SAMUEL ADJAI (c.1810-91). The first native Bishop of Africa, born in the Yoruba country. He was captured in a slave raid when a lad and was several times sold; was rescued by a British man-of-war from a Portuguese slaver, and placed in the mission school at Bathurst, and was the first student enrolled in the Fourah Bay College, where he subsequently served as an assistant instructor. Ordained in 1843, he became a missionary at Akessa. In 1864 he was consecrated Bishop of the Niger country. Crowther accompanied both of the British Niger expeditions, a journal of which he published (1859; 1872). His other works include a dictionary and grammar (1852) of the Yoruba language, a primer (1860), and a grammar (1864) of Nupe, and a translation of part of the New Testament into the Yoruba. Consult *Good out of Evil* (London, 1852) and *The Slave Boy Who Became Bishop of the Niger* (1888), and a biography (New York, 1889) by Page.

CROYDON (OEng. *Croidene*, from Fr. *croie*, It. *creta*, OHG. *krida*, Ger. *Kreide*, chalk, from Lat. *creta*, chalk, AS., OHG. *dūn*, hill, Eng. *dune*, from Ir. *dūn*, Gael. *dún*on, Welsh *din*, hill, fort; connected with AS. *tūn*, Eng. *town*, OHG. *zūn*, Ger. *Zaun*, hedge). A parliamentary and municipal borough and market town of Surrey, England, 10½ miles south of London Bridge (Map: England, F 5). Its parish church of John the Baptist dates from the fourteenth or fifteenth century and has been rebuilt three times. It lies on the edge of the chalk and plastic clay,

near the Banstead Downs, at the source of the Wandle, and is an important railway centre. Among its public buildings are the former palace of the archbishops of Canterbury (now used as a girls' school), Whitgift's Hospital, a handsome Elizabethan structure with which is connected a grammar school, and the municipal buildings containing the law courts and central public library. Owing to its proximity to London, a healthful climate, and the absence of factories, Croydon is a favorite residence place of London business men. This accounts for its great progress in municipal improvements and ownership of public utilities, libraries, water supply, artisans' dwellings and lodging houses, parks and recreation grounds, hospitals, baths, electric lighting, and street railways. It is governed by a mayor, 12 aldermen, and 36 councillors. Its death rate in 1914 was a little over 10 per 1000, the smallest in England for a city of its size. Pop., 1851, 10,000; 1901, 133,895; 1911, 169,559. Consult Steinman, *History of Croydon* (London, 1836).

CROZAT, krō'zā'. A prominent French family of financiers and art collectors.—PIERRE (1661–1740) was treasurer to the King, and his various acquisitions included 19,000 original drawings, 2000 engravings, 400 paintings, 1382 intaglios and cameos, and a library of 20,000 volumes. Two series of engravings of the drawings and paintings in his and other collections were published in 1729–42 under the title of *Le cabinet de Crozat*. His nephews LOUIS FRANÇOIS (d. 1750), JOSEPH ANTOINE (d. 1750), and LOUIS ANTOINE (d. 1770), inherited the greater part of his collection, to which they added. After their deaths it was dispersed, and the treasures of Louis Antoine ultimately came into the possession of the Russian crown.

CROZET (krō'zā') ISLANDS (in honor of the second in command of the French expedition under Marion-Dufresne which discovered the islands in 1772). A volcanic group in the Indian Ocean, between Kerguelen and Prince Edward Islands (Map: World, O 26). The larger islands are Possession (15 miles long, 8 miles wide, fair anchorage at Navire Bay), East, Apostle, and Hog. The total area is about 200 square miles. They have no permanent population, but are visited by sealion hunters and war vessels. They were recently annexed by France. Consult Roth, *Crozet's Voyage to Tasmania* (London, 1891).

CROZIER, krō'zhēr, JOHN BEATTIE (1849–). An English writer on philosophy and history. He was born of Scottish parents, at Galt, Ontario, and was educated at the Galt Grammar School and at the University of Toronto. Graduating M.D. in 1872, he at once settled as physician in London. His *Religion of the Future* (1880) was followed by *Civilization and Progress* (1885). To aid him in carrying out his studies, he received in 1894 a civil-list pension of £50, which was doubled four years later. In 1897 appeared the first volume of *The History of Intellectual Development on the Lines of Modern Evolution*. Dr. Crozier has also published: *My Inner Life, Being a Chapter in Personal Evolution and Autobiography* (1898); *Lord Randolph Churchill: A Study of English Democracy* (1887); *Sociology as Applied to Practical Politics* (1911). In 1890 he received from the University of Toronto the degree of LL.D.

CROZIER, WILLIAM (1855–). A United States artillery officer and inventor of ordnance.

He was born in Carrollton, Ohio, and on his graduation from West Point in 1876 was assigned to the Fourth Artillery, in which he served three years, taking part in campaigns against the Sioux and Bannock Indians while at Western posts. From 1879 to 1884 he was instructor in mathematics at West Point, and in 1881 won by competitive examination an assignment to the Ordnance Department. In 1898 he was major and inspector general of volunteers. With General Buffington he invented the Buffington-Crozier disappearing gun carriage (see illustration and description under ORDNANCE), which ranks high among modern military inventions, and which has been installed in all the important coast-defense works of the United States. He is also the inventor of a wire-wound cannon. In 1899 he was appointed by President McKinley one of the American delegates to The Hague Peace Conference. In the Peking relief expedition in 1900 he served under General Chaffee as chief ordnance officer, and in November, 1901, was appointed chief of ordnance, with rank of brigadier general, and reappointed in 1905, 1909, and 1913, the detail being for four years. In 1912–13 he was detailed as president of the Army War College, Washington, D. C. Many of the notes and pamphlets on the construction of ordnance published by the War Department are from his pen. He is of international reputation regarding all matters connected with his department of military science.

CRUCE, LEE (1863–). An American public official, born in Crittenden Co., Ky. He was educated at Marion Academy and Vanderbilt University. In 1891 he removed to Ardmore, then in Indian Territory, where he continued to practice law until 1901. From 1903 to 1910 he was president of the Ardmore National Bank. In the latter year he was elected Governor of Oklahoma on the Democratic ticket for the term 1911–15.

CRUCIAN, krō'shan (Dutch *karuis*, Ger. *Karäusche*, older *Karas*, *Karutze*, *Karutsch*, from Fr. *carassin*, It. *coracino*, crucian, from Lat. *coracinus*, Gk. *kopaxios*, *korakinos*, fish like a perch, from *kōpā*, *korax*, raven, so called on account of its color). A species of carp (*Carassius vulgaris*), differing from the common German carp (*Cyprinus*) in the larger scales, in the absence of barbules at the mouth, and in the pharyngeal teeth. It may attain a large size and inhabits lakes, ponds, and slowly flowing rivers in northern Europe and Asia.

CRUCIBLE (ML. *crucibulum*, *crusibulum*, melting pot, from OF. *cruche*, Portug. *crugo*, crock, from OHG. *chrug*, Ger. *Krug*, AS. *crōg*, jar, or Ir. *crogan*, Gael. *crog*, Welsh *crochan*, pitcher; confused by popular etymology with Lat. *cruz*, cross). A highly refractory vessel in which metals, glass, or other material requiring a high temperature may be fused, melted, or treated. Crucibles are made in all sizes, from that of a lady's thimble to one which will hold 400 pounds of molten zinc. The essentials in their construction are that they be made to endure extreme heat without fusing and sudden changes of temperature without breaking. A great variety of materials are used for making crucibles, as clay, porcelain, graphite, lime, aluminum, silver, and platinum. The most common form is the *Hessian crucible*, made of equal parts of fire clay and coarse sand. It will stand extreme heat, but not very sudden changes in temperature. This is the cheapest variety and is

adequate for all ordinary processes of assaying ores and refining metals or alloys. They come in nests, in sizes varying from 2 to 8 inches in diameter. *Porcelain crucibles* are largely used for special fusions in chemical analyses. *Coke crucibles* are of value in the fusion of certain metals. *Graphite crucibles* meet all temperature conditions, but are slowly acted on by metallic oxides or gases. They are largely used in making crucible steel and various alloys and in refineries for the melting of gold-silver bullion. *Lime crucibles* are absolutely infusible. *Aluminum crucibles* possess the advantage of not being readily acted on by the materials fused, even sodium having no effect on them. The *Berlin crucibles* are made of a composition of fire clay, black lead, powdered coke, and old crucibles. *Silver crucibles* are of use for special analyses. *Platinum crucibles* are of utmost importance in chemical laboratories on account of the infusibility and noncorrosive character of the metal. Compounds of lead, mercury, and other metals which will combine with platinum when heated cannot be treated in these crucibles.

CRUCIFERÆ (Neo-Lat. nom. pl., from Lat. *cruz*, cross + *ferre*, to carry, bear), the mustard family. One of the most characteristic families of dicotyledons, including about 200 genera and 1800 species of very wide geographic distribution. It is a very well-marked and therefore easily distinguished family. There are four conspicuous characters by which it may be recognized: (1) the plants are more or less pungent, as the name "mustard family" would suggest; (2) there are four petals that spread in such a way as to form a Greek cross, from which the family name was taken, (3) there are six stamens, four of which are longer and stronger than the other two (*tetradynamous*); and (4) the fruit is the characteristic pod called a *silique*, which means that it is divided into two compartments by a false partition and that each half usually opens from below, leaving the seeds attached to the partition. The amount of variation in the family is indicated by the fact that 10 distinct tribes are recognized, the differences being based largely on the characters of the pods. Among the useful plants included in the family are mustard, radish, turnip, cabbage, cauliflower, cress, etc. Some of the ornamental plants are sweet alyssum, wallflower, the various stocks, etc. The family also contains many common weeds, such as shepherd's purse, wild mustard, pepper grass, etc. Sulphur compounds are common in many, as may be recognized from the odor given off when cooking. The pungence and acidity of the *Cruciferae* seem to depend on a volatile oil, or on different volatile oils of a very similar character, present in various degrees in different species, or in the same species under different circumstances, and in different parts of the same plant. This diversity is very well illustrated in the common turnip, in the different qualities of the root as to sweetness and acidity in different soils or seasons, and in the difference between the flesh and the rind. The seeds of the *Cruciferae* contain a fixed oil, which is extracted from some (rape, colza, in Europe; *Camelina sativa* and *Erysimum perfoliatum* in Japan), to be used as a lamp oil and in the arts, and the oil cake of which is valuable for feeding cattle.

CRUCIFIX (Lat. *cruci fixus*, fastened to the cross, from *cruz*, cross + *figere*, to fasten). A cross with the effigy of Christ affixed to it. It

must be distinguished, as an instrument of devotion and liturgical use, from the pictorial or other representations of the scene of the Crucifixion (q.v.). The cross (q.v.), at first used for devotional and symbolic purposes in its simplest form, came first to be decorated with the symbolic sacrificial lamb (see **CHRIST IN ART**), with the addition sometimes of the medallion bust of Christ, as in the Vatican cross. Perhaps the earliest crucifixes were small devotional objects which contained portions of the supposed true cross, such as that of Mount Athos, or were pictorial crosses, like that of Queen Theodolinda at Monza (sixth century). During the Carolingian age the crucifix came into somewhat more general use in the West, but, having been opposed in the East shortly after its introduction by the image-hating iconoclasts (eighth century), it obtained a foothold there, not as a plastic image, but in the form of a pictured Crucifixion. The manner in which the figure of Christ was represented on the crucifix is the same as that in pictures of the Crucifixion. During the Romanesque and Gothic periods there was an increasing number of large crucifixes, in some of which the figure was almost or wholly life-size. These were mainly of four classes—the stationary *altar crucifix*, that stood in the centre of the altar or at the entrance to the choir, sometimes with accompanying statues of the Virgin and St. John (e.g., at Wechelsburg, Saxony, thirteenth century); the *road crucifix*, at crossroads, or to mark certain spots for devotion; the *station crucifix*, which often crowns a hall at the end of a line of devotional stations (q.v.) known as the Way of the Cross; the *processional crucifix*, usually smaller and of metal, carried in religious processions. All such crucifixes became very numerous from the thirteenth to the sixteenth century and were sometimes carved by the greatest sculptors, as in the case of Brunelleschi's crucifix in Santa Maria Novella and Donatello's in Santa Croce, Florence.

A curious compromise between a picture of the Crucifixion and a crucifix is a class of representations in which the figure of Christ is painted on a panel cut in the shape of a cross. A very early instance is in the cathedral of Spoleto. Others by the Berlinghieri, Margheritone, and other early painters (thirteenth century) exist at Lucca, Pisa, and Florence. The plastic crucifix was more popular in northern Europe than in Italy before the fifteenth century and was often executed in wood, while for smaller examples ivory and metals were most used. The realistic schools of North Italy, however, during the fifteenth and sixteenth centuries, especially the artists of Modena, gloried in realistic crucifixes of painted wood and terra cotta. The most impressive are the large station crucifixes, such as that of the Sacro Monte at Varallo. Consult: Stockbauer, *Kunstgeschichte des Kreuzes* (Schaffhausen, 1820); Lazar, *Die beiden Wurzeln der Kreuzfix Darstellung* (Strassburg, 1912); Schönermark, *Der Kreuzfixus in der bildenden Kunst* (ib., 1908). See also the bibliographies under **CROSS** and **JESUS CHRIST IN ART**.

CRUCIFIXION, THE. A favorite subject in Christian art since the sixth century, before which time effigies of Christ were unusual. The treatment of the subject may be divided into two periods: in the first, which lasts until about the twelfth century, Christ is represented adhering to the cross without signs of suffering, in-

stead of hanging upon it, the figure generally robed and wearing a royal crown—Christ living and triumphant. After the eighth century the two thieves, the centurion, the soldier with the sponge, the Virgin and St. John are usually introduced, together with symbolical figures. One of the earliest representations is the Crucifixion carved on the wooden door of the Santa Sabina, Rome, dating from the sixth century. In the tenth century the subject is treated more realistically, and after the twelfth the Christ Triumphant is replaced by the humiliated, dead, or dying Christ; the sufferings are accentuated, the crown of thorns appears. The Magdalene and sometimes the other Marys are associated with the Virgin and St. John, and often many other figures are introduced. This treatment, rendered popular by the schools of Cimabue and Giotto, was followed by the great masters of the Renaissance, almost all of whom painted the Crucifixion. Among the most famous are those by the Italian masters: Antonello da Messina (Antwerp Gallery); Fra Angelico (San Marco, Florence); Perugino (Santa Maria dei Pazzi, Florence); Andrea Mantegna (Louvre); Luca Signorelli (Florence Academy); Guido Reni (Bologna Gallery and San Lorenzo in Lucina, Rome); and Tintoretto (Scuola di San Rocco, Santi Giovanni e Paolo, and San Cassiano, Venice). Other famous examples are by the German masters Lucas Cranach (Stadtkirche, Weimar), and Albrecht Dürer (Dresden Museum); by the Flemish masters Rubens (Antwerp Museum) and Van Dyck (cathedral of Malines); by Murillo (Hermitage, St. Petersburg). Consult the bibliography of JESUS CHRIST IN ART.

CRUDEN, krōd'en, ALEXANDER (1701-70). An English scholar, maker of a well-known Bible concordance. He was born at Aberdeen and educated at Marischal College in that city, with a view to the church, but, having exhibited decided symptoms of insanity, he was for some time placed in confinement. On his release he left Aberdeen and, after spending several years as a tutor in and about London, settled in London in 1732 as a bookseller. In 1735 he received the title of "bookseller to the Queen." In 1737 he published his *Complete Concordance of the Holy Scriptures of the Old and New Testaments*. Soon afterward he relapsed into insanity, and his friends were obliged to remove him to a private asylum, where he appears to have been harshly treated. On his recovery he published an account of his sufferings (1738). He then acted as a corrector for the press. Cruden now believed himself divinely commissioned to reform the manners of the world, styled himself Alexander the Corrector, and went about exhorting the people to refrain from Sabbath breaking and profanity. He also petitioned the King for the honor of knighthood, and Parliament to constitute him by act "the corrector of the people," hoping by such honors to influence the people more effectually. He was mentally unbalanced during the rest of his life, and died at Islington, London, Nov. 1, 1770. The second edition of his concordance appeared in 1761 and the third in 1769; since then it has been repeatedly reprinted in full, with his definitions, which make it a Bible dictionary, or in abridgment, and has been made the basis of other concordances. Perhaps the best edition of the complete work is by Alexander Chalmers (London, 1812; 10th ed., 1824), with his life. See CONCORDANCE.

CRUELTY (OF. *cruauté, cruelté*, Fr. *cruauté*, from Lat. *crudelitas*, cruelty, from *crudelis*, cruel, *crudus*, raw). The intentional infliction of unnecessary pain. As a legal term, it is used chiefly in connection with divorce, with the treatment of children, and the treatment of animals.

As a ground for *divorce*, cruelty is not limited to physical violence, although formerly it was thought to be thus restricted. It is now held to include any unjustifiable conduct on the part of either husband or wife which so grievously wounds the feelings or destroys the peace of mind of the other as seriously to impair bodily health or endanger life, or which utterly destroys the legitimate ends and objects of matrimony. See DIVORCE.

While the common law does not permit a child to sue a parent in *tort* for injuries inflicted by cruel treatment, it does provide for the criminal punishment of parents guilty of such cruelty, and courts of equity have not hesitated to take children away from a parent who abuses their persons or corrupts their morals. Cruel treatment of animals by their owners is not a criminal offense at common law unless it is of such an aggravated kind as to amount to a nuisance. See CRUELTY TO ANIMALS; CRUELTY TO CHILDREN; HUSBAND AND WIFE; PARENT AND CHILD.

CRUELTY TO ANIMALS, PREVENTION OF. The earlier laws on this subject were not so much the outcome of humane principles as for the protection of animals considered as property. At the common law cruel treatment of animals by their owner was a criminal offense only when it was so aggravated as to be a nuisance. But the general tendency of the nineteenth century towards the organization of philanthropy was not slow to operate in this direction. England was the first country to organize (in 1824) a society for the purpose. Legislative enactments followed, and the Statute of 1849 provides a penalty not exceeding £5 (in addition to a further sum recoverable as damages by the owner) for any person who "shall cruelly beat, ill-treat, overdrive, abuse, or torture" a variety of domestic animals. The movement spread to Germany, France, and the United States. The first American society was chartered by the Legislature of New York in 1866, chiefly through the efforts of Henry Bergh, who was its president for 22 years. Cruelty to domestic animals is now punishable in most of the United States by fines ranging from \$5 to \$100, or imprisonment from 30 to 60 days, or both. The Ohio law, as amended in 1898, specifies cruelty by beating, mutilating, lack of good food and water, carrying in an inhuman manner, overwork, and crowded transportation. The New Hampshire Law of 1897 gives the officer making an arrest the right to seize the animal, notifying the owner, and to kill it if disabled, or to hold it as security for proper damages.

The Pennsylvania Society for the Prevention of Cruelty to Animals (founded 1867, incorporated 1868) is generally accepted as a model. It endeavors to prevent cruelty by moral suasion and well-considered advice rather than by coercion. It tries to educate where cruelty is due to ignorance and thus attempts to secure the use of proper harness and bits for horses and the abolition of the checkrein. A similar movement in England against the checkrein, excessive curbing, and the docking of horses' tails received great impetus from the hearty support of King

Edward VII, then Prince of Wales. The Pennsylvania society was the first to provide (1874) an ambulance for the removal of disabled animals and a derrick with chain pulley and sling for hoisting animals out of holes. In several States the weight of a load which may be drawn uphill is carefully regulated by the work of such societies; and homes are very generally established for stray dogs and cats, where the animals are painlessly put to death in case of need. Similar societies now exist in nearly every European country, in Algeria and South Africa, in Australia, and in Mexico, Brazil, and the Argentine Republic. See VIVISECTION; CRUELTY TO CHILDREN, PREVENTION OF; ORNITHOLOGICAL SOCIETIES.

CRUELTY TO CHILDREN, PREVENTION OF.

owing to the long survival of the Roman idea of parental power (see CRUELTY), and the comparatively late growth of a tendency towards social legislation, it was not until very recent times that organized effort in this direction became common. Curiously enough, the movement in the direction of organization, in the United States at least, did not take definite shape until eight years after that for the prevention of cruelty to animals. The New York Society for the Prevention of Cruelty to Children was organized in January, 1875, and within five years 10 other societies followed, from Boston to San Francisco. As the movement grew, some societies originally intended for the protection of animals added the care of children to their purpose. In other cases "humane societies" were organized to cover both purposes. The total number of societies in the United States in 1913 for the protection of children, or children and animals, was 354. They were brought into close relations by the Humane Association (qv), which has included societies for the protection of children since 1887. As in the case of animals, their work is twofold—the promotion of better legislation in their field and the diligent enforcement of existing laws. They also investigate cases of alleged cruelty or neglect and present to the courts such facts as they learn. The New York society exceptionally includes the investigation of cases of destitution. By the work of the agents whom it stations in all the magistrates' courts it has come to have a powerful advisory influence on the commitment of destitute, neglected, and wayward children in New York City, thus affecting the lives, on an average, of about 15,000 children. These societies in general are private corporations, supported by subscriptions, although in New York, Philadelphia, and a few other places, some aid has been given from public funds. In the State of Indiana since 1889 boards of children's guardians have been organized by law, which not only investigate cases of cruelty and neglect and secure the punishment of the offenders, but also undertake subsequent oversight of the children. The Colorado Humane Society was made by the Legislature of 1901 a "State bureau of child and animal protection," with an appropriation of \$3000 per annum for two years; this, however, remains under private control, though three State officers are made ex officio members of its board of directors. Consult: Folks, *The Care of Destitute, Neglected, and Delinquent Children* (New York, 1902); Hart, *Preventive Treatment of Neglected Children* (ib., 1910); *Annual Reports of the American Humane Association* (1876—); *The National Humane Re-*

view (Albany, 1913—). See DEPENDENT CHILDREN.

CRÜGER, kry'ger, JOHANNES (1598–1602). A German choral composer and musical author. He was born at Grossbresen, Province of Brandenburg, and was educated at the Jesuit College in Olmütz, under Hamburger at Ratibon, and at the University of Wittenberg. He was cantor of the Nikolaikirche, Berlin, from 1622 until his death. As a composer of Lutheran chorals, he has never been excelled, and many of his melodies, such as *Nun danket alle Gott*; *Jesus, meine Zuversicht*; *Schmücke dich, o liebe Seele*, have survived to the present day. His sacred compositions were published under the title *Praxis Pietatis Melica, oder Kirchenmelodien über Luthers und anderer Gesänge*, for four voices and two instruments (45th ed., 1736).

CRUIKSHANK, kryk'shank, ERNEST ALEXANDER (1854—). A Canadian historical and military writer. He was born in Welland Co., Ontario, and was educated at Upper Canada College, early acquiring an extensive acquaintance with several modern languages. For a few years he was engaged in newspaper work in the United States, but he returned to Fort Erie, Ontario, became warden of Welland County (1886), police magistrate at Niagara Falls, Ontario (1903), and was in 1908 military archivist at Ottawa. In 1899–1904 he was lieutenant colonel commanding the Forty-fourth Regiment of militia, and afterward he was appointed a district officer commanding. In 1907 he was elected a fellow of the Royal Society of Canada. His principal publications are: *Battle of Lundy's Lane* (1889, 3d ed., 1894); *Battle of Queenston Heights* (1891); *Battlefields of the Niagara Peninsula* (1891); *A Century of Municipal History* (1892–93); *Battle of Fort George* (1896); *Documentary History of the Campaigns on the Niagara Frontier in 1812–14* (9 vols., 1896–1910).

CRUIKSHANK, kryk'shank, GEORGE (1702–1781). An English caricaturist, etcher, and painter. He was born in London, Sept. 27, 1702, the younger son of Isaac Cruikshank, himself a caricaturist. His early wish to follow the sea was opposed by his mother, who desired that his father should instruct him in art; but his father refused, and George, failing to secure entrance into the Royal Academy schools, was almost entirely self-taught. His apprentice work as caricaturist appeared in the monthly periodicals called, respectively, *The Scourge* and *The Meteor*; and about the same period he made the sketches referring to the trial of Queen Caroline. Indeed, a great deal of his work, which at that time reflected the political situations of the day, may be looked upon now as being fairly historical in its bearing. By his "Bank-Note not to be Imitated" (1814) he contributed largely to the abolishment of hanging for minor offenses. As early as 1823 he began the illustrations for Grimm's *Fairy Tales*. In 1835 he published the first number of the famous *Comic Almanac*, which flourished under various managements until 1853. In 1847 he made a series of woodcuts on "The Bottle," and his "Sunday in London," "The Gin Trap," and "The Gin Juggernaut," published at this time, had a wide circulation. It is said that the unfortunate life of a personal friend influenced him to exercise his gifts in a crusade against intemperance. A strong moral was enforced in these drawings. His best-known illustrations were those made

for Dickens's *Oliver Twist* and the *Sketches by Boz*, those for the Waverley novels, and for the *Memoirs of Grimaldi*. In 1833 he designed and etched 15 plates for illustration of *Don Quixote*. After 1830 he essayed to paint, and, though he had little skill in manipulating pigments, his efforts in that direction show his keen insight into human nature and his unique genius in portraying the grotesquely humorous. His "Cinderella," painted in 1854, is in the South Kensington Museum. In 1862 he painted for the National Temperance League "The Worship of Bacchus," which is now in the National Gallery. Rossetti wrote, in reference to this picture, that "the man who in his old age occupies himself for nearly three years in painting this homily upon canvas, to the most negative results in point of art, deserves respect." George Cruikshank died in London, Feb. 1, 1878, and was buried in St. Paul's Cathedral. Consult: Stephens, *A Memoir of George Cruikshank* (London, 1891); Bates, *George Cruikshank* (ib., 1878); Jerrold, *Life of George Cruikshank* (ib., 1897); *Cruikshank's Water-Colors* (ib., 1903); Cohn, *Bibliographical Catalogue of the Printed Works Illustrated by George Cruikshank* (New York, 1914), and a biography by W. H. Chesson (1912).

CRUIKSHANK, ISAAC (c.1756-c.1811). An English caricaturist and water-color painter. He was born in Leith, the son of a painter, and, early left an orphan, followed his profession as an illustrator, water-color painter, and political caricaturist. He settled in London and married Miss Mary Macnaughten; excepting this, very little is known of his career. Two of his water colors, "A Child Lost" and "A Child Found," are in the South Kensington Museum. His political drawings were as well known as those of Gillray. His other designs include "The Rage; or 'Shepherds, I Have Lost my Waist,'" a skit on the exaggerated fashions of the times. His oldest son, ISAAC ROBERT (1789-1856), born in London, was a miniature painter and caricaturist. He satirized the political and social customs of the time, but after 1825 seems to have taken more to illustrating. His most popular work was done for *Life in London* (1821), in collaboration with his brother George, the text being supplied by Pierce Egan. It was dramatized and achieved a notable success. Further work of Cruikshank's was 71 illustrations for Charles Molloy Westmacott's *English Spy* (1825); and illustrations for Crithannah's *Original Fables* (1834); Colburn's *Kalendar of Amusements* (1840); and *The Orphan*, a translation of Eugène Sue's *Mathilde*. While neither as gifted nor as imaginative as his celebrated brother George, Robert Cruikshank was a good draftsman and a clever artist. Consult biographies of George Cruikshank by Jerrold (1897) and W. H. Chesson (1912).

CRUIKSHANK, WILLIAM CUMBERLAND (1745-1800). A Scottish anatomist, author of a number of medical works, the most valuable of which is one on *Insensible Perspiration*, showing that carbonic acid is constantly given off by the skin. His work, *The Anatomy of the Absorbing Vessels of the Human Body* (1786, 2d ed., 1790), was translated into French, German, and Italian.

CRUISER (from *cruise*, from Dutch *kruisen*, to cruise, to cross, from *kruis*, OHG. *cruc*, Ger. *Kreuz*, AS. *crāc*, Eng. *cross*, from Lat. *crux*, cross). A war vessel built for cruising. The principal features of a cruiser are: (1) sea-

worthiness; (2) ability to keep at sea for long periods (this requires large capacity for coal and stores, and habitability); (3) speed; (4) offensive and defensive powers. Cruisers are of many kinds, but they may be divided into three general classes—*armored cruisers*, *protected cruisers*, and *unprotected cruisers*. The dividing line between the classes is not very distinct, as some cruisers partake of the character of two classes. *Armored cruisers* carry armor for the protection of the ship, or battery, which is applied vertically, or nearly so. *Protected cruisers* have no vertical armor, but the vitals are protected by a thick steel deck, which is nearly horizontal, placed about the level of the surface of the water, but having the edges of the deck near the ship's sides inclined downward, so as to meet the side several feet below water. This part of the deck (the slope) is thicker than the middle part, called the *flat*. *Unprotected cruisers* have no protective deck. Some of them have a watertight deck in the same region, but of insufficient thickness to admit of styling it a *protective* deck. Cruisers are frequently divided into first-class cruisers, second-class cruisers, etc. These distinctions are purely arbitrary and differ in the various navies. In the United States navy small cruisers are called "gunboats." This is a term properly applicable to craft so small as to approximate to large boats. In the British navy the terms "gunboat" and "gun vessel" are used almost as loosely. In addition to the regular cruisers a most important addition to the naval force in time of war is found in fast merchant steamers, which are frequently armed as *auxiliary cruisers* and used as ocean scouts or fleet scouts; in the former case they are bound on distant missions, in the latter they accompany the fleet. See SHIPS, ARMORED.

CRUITHNIGH, *krūth'ni*, or **CRUITHNIANS**, *krūth'ni-anz*. The name given by the Irish to invading tribes of Picts, from whom the kings of Ulster were supposed to have descended. The appellation was subsequently applied to some of the inhabitants of the counties of Antrim and Down. They were also called Dalaradians, and their country Dalaradia (q.v.). The name "Cruithnigh" is sometimes derived from the custom of painting and tattooing practiced by the people. The Irish called the Picts of Britain Cruithnigh, and it is probable that the Irish Cruithnigh were related to those of Britain, as a Pictish colony came from Scotland and settled in Dalaradia a century before the Christian era. Consult Skene, *Celtic Scotland* (3 vols., Edinburgh, 1876-80).

CRUIVE, *krūv*, or **ZAIRE**, *zār* (probably from Gael. *crò*, sheep cote, hovel). A contrivance erected upon rivers in Scotland for the purpose of catching salmon. These weirs are of great antiquity and consist of a kind of hedge formed by stakes driven into the ground, the interstices being filled with brush, and the mode of capturing salmon being similar to those employed with bag and stake nets. See NET.

CRUMMELL, ALEXANDER (1818-98). A negro clergyman of the Protestant Episcopal church. He was born in New York of a slave father and free mother, was educated at the Oneida Institute, N. Y., and graduated from Queens' College, Cambridge, England. He held a professorship in the Liberian College, at Liberia, West Africa, and then returned to the United States, and was rector for 22 years of St. Luke's Church, Washington, D. C. He was

one of the first negro clergymen to enter the Episcopal church. His works comprise: *The Future of Africa* (1862); *The Greatness of Christ, and Other Sermons* (1882); *Africa and America* (1891).

CRUMMLES, krum'lz, VINCENT. The head of a theatrical family, in Dickens's *Nickolas Nickleby*.

CRUNCH'ER, JERRY. In Dickens's *Tale of Two Cities*, a general-utility man in Tellson's banking house by day and a "resurrection man" at night.

CRUPPI, kru'pé', JEAN (1855-). A French public official, born at Toulouse, France. He was general advocate in the Court of Appeals at Paris, advocate at the Court of Cassation, and, being elected a deputy for Haute-Garonne, served as Vice President of the Chamber. Later he was Minister of Commerce, and, in 1911, Minister of Foreign Affairs in the Monis cabinet. He was made a chevalier of the Legion of Honor. His publications include, *Un avocat journaliste au XVIII^e siècle*, *La cour d'assises: Pour l'expansion économique de la France* (1910), *Femmes écrivains d'aujourd'hui* (1912).

CRUQUIUS, kroo'ki-ús. The Latinized name of a renowned Flemish scholar of the sixteenth century, Jacques de Crusque. He was professor at Bruges, and his studies in Horace have had a most important influence on our knowledge of that poet. In his commentary on Horace (Antwerp, 1578) Cruquius gives readings from the four valuable "Blandinian" manuscripts, since destroyed, one of which is very ancient, and also quotes the marginal notes of an early commentator, whose name is lost, but who is now cited as "Commentator Cruquianus." Consult Palmer, edition of Horace's *Satires*, xxix-xxxii (4th ed, London, 1891), and Endt, *Studien zum Commentator Cruquianus* (Leipzig, 1906).

CRUSADE (Fr. *croisade*, It. *crociata*, from ML. *cruciata*, crusade, from *cruciare*, to mark with the cross, from Lat. *crux*, cross.) A war undertaken for a religious purpose; specifically one of the wars waged by the Christians for the recovery of the Holy Land. Towards the close of the eleventh century, when the Byzantine Empire was in great danger of being conquered by the Seljukian Turks, the Emperor Alexis Comnenus appealed for help. At the Council of Clermont, in November, 1095, Pope Urban II made his memorable speech, in which he exhorted his hearers to bear aid to the Eastern Empire and to reconquer Jerusalem. His fiery eloquence evoked an enthusiastic response; for he appealed to all the motives which were then influential—to the spirit of religious enthusiasm, to the love of fighting and adventure, and to the desire, in many, of bettering their fortunes. After the conclusion of Urban's speech many pressed forward to take the Crusader's vow and the cross, which was the symbol of this vow and gave its name to the movement. The agitation spread rapidly to all the countries of western Europe and embraced all ranks of society. The nobles made deliberate preparations for an expedition which was expected to last three years; but the common people, among whom Peter the Hermit (q.v.) and others had been busily preaching the Crusade, were too impatient, and many of them too poor, to wait. In the spring of 1096 thousands of men, women, and children started in different bands under the leadership of Walter the Penniless, Peter, and others. They marched from Cologne and the Rhineland, across Ger-

many, through Hungary, along the Danube, and southward to Constantinople. Later bands were very disorderly; their course was marked by persecution of the Jews, robbery, and plunder, and many of them were slaughtered by the infuriated inhabitants of the countries through which they passed. Those who reached Constantinople were received graciously by the Emperor. Their disorderly conduct, however, soon caused him to transport them to Asia Minor, where almost all were slain by the Turks. The march of these disorderly bands is generally styled the Peasants' Crusade.

The First Crusade, 1096-99. In the summer and fall of 1096 the real armies, led by the nobles, began their march. Among the leaders were Godfrey of Bouillon, Bohemond, Prince of Tarentum, Robert of Normandy, Robert of Flanders, and Raymond, Count of Toulouse, who was the latest of all to start. They proceeded by different routes to Constantinople, where they were delayed by the Emperor, who was alarmed by their numbers and lack of discipline, but wished to make use of their strength. An agreement was finally made, by which almost all of the leaders were induced to become his vassals, but in the campaign which followed neither party kept its promises, and the long negotiations resulted only in a mutual feeling of antagonism, which proved disastrous to the Christian cause. All of the Crusaders met at the siege of Nicea, in May, 1097, when the army may have numbered 100,000, besides the women and noncombatants. Six millions were said to have taken the cross, but undoubtedly the number was greatly exaggerated; many, besides, who had taken the vow had turned back or were dead. Nicea was taken, the Sultan of Iconium was defeated at Doryleum, and in a few months the Crusaders accomplished the arduous march to Antioch, which was captured after a siege lasting from Oct. 21, 1097, to June 2, 1098. In the meantime Baldwin, brother of Godfrey, had taken possession of Edessa for himself, and Bohemond now established himself as Prince of Antioch. The leaders became so intent on making conquests for their own profit that the advance to Jerusalem was delayed for months. Finally, on June 7, 1099, the remnants of the army, about 20,000 in number, reached Jerusalem. After a siege of five weeks the city was captured, by reckless daring, on July 15. The Crusaders vented their wrath in an indiscriminate massacre, in which neither youth nor age was spared, and men and women were slaughtered in the holy places. The leaders wrote home exultingly, "In Solomon's Porch and in his temple our men rode in the blood of the Saracens up to the knees of their horses." Godfrey was elected "Baron and Defender of the Holy Sepulchre," and after the battle of Ascalon, in which the Egyptian army was defeated with great slaughter, almost all of the Crusaders returned home, leaving Godfrey with a small band of followers to defend Jerusalem. Bohemond held Antioch with his Norman followers. Baldwin was in the distant Edessa. A large part of Asia Minor was restored to the Greek Emperor. The news of the victories gained by the Crusaders set into motion three great armies from France, Germany, and Italy (1101-02), but, owing to their own excesses and folly, they fell an easy prey to the Mussulmans in Asia Minor.

The Second Crusade, 1147-49. In 1144 Edessa was captured by the Mohammedans. The news

of its loss aroused great alarm in the West, and a new Crusade was initiated, in which special privileges were offered to all participants. Bernard of Clairvaux was the great preacher of this movement. Conrad III of Germany and Louis VII of France took the cross and led great armies to the relief of the Holy Land. Conrad and Frederick Barbarossa starting from Ratisbon, in April, 1147. The march was very disorderly, and when the Crusaders entered the Byzantine Empire they came to blows with the Greeks. After much trouble the Bosphorus was crossed, and the army advanced into Asia Minor, led by Greek guides. The guides proved unsatisfactory, the troops were harassed by the Turks, and finally, threatened with famine and death, they retreated, closely pursued by the enemy, only a very few getting back to Nicea. Louis had better fortune, his army was more orderly, and he was well received by the Greek Emperor, although, when the French King crossed to Asia Minor, the Emperor refused to furnish guides until Louis and his barons had taken the oath of homage. Near Nicea they met the German fugitives, with whom they joined forces and marched along the coast. Conrad soon turned back and spent the winter in Constantinople, but Louis went on, and, after meeting with a terrible defeat, in which the loss was very great, he and his knights went by ships to Antioch, while the common people were left behind to be slaughtered. From Antioch Louis proceeded to Jerusalem, where he was joined by Conrad. Together they planned the renewal of hostilities on a grand scale, but their schemes miscarried, and the kings went home in disgust.

The Third Crusade, 1189-91. The capture of Jerusalem by Saladin, in 1187, caused Frederick Barbarossa, Philip Augustus of France, and Richard the Lion-Hearted of England to take the cross. Frederick was drowned soon after he reached Syria. Richard and Philip captured Acre after a long siege, but the two kings quarreled so bitterly that Philip went home soon after the capture. Richard, thwarted at every turn by Saladin (q.v.), was compelled to make a truce without accomplishing anything more.

The Fourth Crusade, 1201-04. Innocent III (q.v.) made every effort to bring about a new Crusade. A great number of Latin nobles and knights were induced to take the cross, and the enthusiasm of the people was unbounded. Among the leaders in this Crusade were Baldwin of Flanders, Boniface of Montferrat, Geoffroy de Villehardouin, Louis of Blois, and Simon de Montfort. Arrangements were made with Venice that the Republic should supply the vessels and provisions for the journey; but, when the Crusaders reached Venice, they could not raise the amount agreed upon for payment. After a long delay they made a new bargain with Venice by undertaking to capture for her the city of Zara, in Dalmatia. The common soldiers were kept in ignorance of the infamous plan until it was too late for effectual protest. Zara was sacked, and the army spent the winter there. In the meantime a new plot was hatched by which, under pretense of reinstating the rightful Byzantine Emperor, Isaac Angelus, the Crusade was diverted to Constantinople. Isaac Angelus was restored to his throne, but, as he was not able to fulfill the conditions to which he had been compelled to agree, the Crusaders

turned against him. Constantinople was captured a second time and sacked (1204). Much of the city was burned, precious works of art were destroyed, and enormous quantities of booty were secured. The Crusaders and the Venetians divided their conquests, and the Latin Empire (q.v.) was established.

The last three Crusades effected little permanent good for the Christian cause. *The Fifth Crusade* took place in 1228-29. The German Emperor, Frederick II (q.v.), who had taken the vow, went to the Holy Land and, by a treaty with the Mohammedan powers, secured Jerusalem. In 1244 the Holy City fell into the hands of the Kharezmians. *The Sixth Crusade* (1248-54) was led by Louis IX of France (St. Louis). He invaded Egypt and, although at first successful, was soon defeated, captured, and compelled to pay an enormous ransom. He then went to the Holy Land, rebuilt some fortresses, but accomplished little of importance. In 1270 he started on the *Seventh Crusade*, but was induced to turn aside to Tunis, where he died. Edward Plantagenet associated himself with Louis IX in that Crusade. He abandoned the Holy Land in 1272, and this year is generally considered to mark the end of the Crusades.

In addition to the seven principal Crusades, there were countless other expeditions. In some of these large armies took part, as in the Crusade of 1101, of which mention has been made; the German Crusade of 1197, the Children's Crusade (q.v.) in 1212, and the Crusade of John of Brienne and Andrew II of Hungary in 1217-21, which achieved the conquest of Damietta, in Egypt, in 1219. The last is often called the Fifth Crusade, and in fact the first four Crusades are the only ones to which the same numbers are assigned by unanimous consent. In addition, almost every year, from 1100 to 1270, small bands of Crusaders went to the Holy Land, and after 1270 many attempts were made to reconquer Jerusalem. There were also Crusades in the West against the Moors in Spain and against the heathen Prussians. (See TEUTONIC KNIGHTS.) Besides these Crusades against pagans many Crusades were preached against the Albigenses (q.v.), the Hohenstaufen (q.v.), and other opponents of the popes, the name being used for all kinds of expeditions in which the Church was interested.

The Results of the Crusades. The Crusades were of very great importance in the history of Europe in that they accelerated many movements which without them would probably have advanced much more gradually. They contributed to the growth of the great Italian seaports by establishing closer commercial communications between Europe and the East; they enriched the Church and increased its powers, and they helped to develop the strength of the French monarchy by killing off large numbers of the turbulent nobility, or removing them to a more grateful field of activity in Asia, and Africa. For Europe at large the most important results were these: 1. They checked the advance of the Mohammedans for a considerable period of time; for, by carrying the war into the enemy's country, they prevented his advance into Europe. It is true that too much stress may be laid on this fact, for the Crusades undoubtedly weakened the Byzantine Empire and made it an easier prey for the Turks in the fifteenth century; but in

the twelfth and thirteenth centuries the Crusading states in the East served as outposts to guard against the invasion of Europe. 2. The Crusades enriched Europe greatly by promoting the growth of commerce. In order to transfer the Crusading armies and to supply their various needs, large ships had to be built. These brought back to the West the products of the Orient. In Asia and Africa the Crusaders acquired new tastes and desires, which had to be gratified by a more extensive commerce—witness the remarkable growth in the use of sugar and spices in the twelfth century. Money, which previously had been hoarded, was put into circulation to equip the crusading hosts. All of these causes led to a remarkable growth in wealth and prosperity, which benefited especially the inhabitants of the cities in western Europe. This is regarded by many as the most important result of the Crusades. 3. The Crusades caused a broadening of the intellectual horizon and originated a tendency towards skepticism. "On its Oriental Studienreisen young Europe studied industriously and with great results." The constant contact for two centuries with the more advanced Byzantine and Arabic culture taught the Crusaders many lessons in civilization. The admiration which they learned to feel for heretics and Mohammedans dispelled many of their prejudices. Some Crusaders became Mohammedans, others became freethinkers. There was a rapid spread of heresies. "The roots of the Renaissance are to be found in the civilization of the Crusades." There have been three periods of great advance in the history of Europe—the Crusades, the Reformation, and the French Revolution; and of these three the Crusades were not the least important and influential.

Bibliography. The literature of the Crusades is very extensive, and only a few of the principal titles can be given. The most important collection of sources is the *Recueil des historiens des croisades*, of which 15 folio volumes have been published (Paris, 1841 et seq.). Consult also Bongars, *Gesta Dei per Francos* (Hanover, 1611); the publications of the Société de l'Orient (Paris, 1878-84), Villehardouin and De Joinville, *Chronicles of the Crusades* ("Everyman's Library," 1908). Of general histories the best are: Wilken, *Geschichte der Kreuzzüge* (7 vols., Leipzig, 1807-32); Michaud, *L'Histoire des croisades* (Paris, 1825-29, many later editions), and also an English translation by Robson, *History of the Crusades* (London, 1881); Kugler, *Geschichte der Kreuzzüge* (Berlin, 1891); Archer and Kingsford, *The Crusades* (New York, 1895); Bréhier, *L'Eglise et l'Orient au Moyen Age* (Paris, 1907); Prutz, *Kulturgeschichte der Kreuzzüge* (Berlin, 1883); Von Sybel, *Geschichte des ersten Kreuzzuges* (Leipzig, 1900); Röhrich, *Geschichte des Königreichs Jerusalem* (Berlin, 1898). See ANTIOCH, PRINCIPALITY OF; DANDOLO, LATIN KINGDOM OF JERUSALEM.

CRUSADE, CHILDREN'S. See CHILDREN'S CRUSADE.

CRUSCA, krō'skā, ACCADEMIA DELLA. See ACADEMY.

CRUSENSTOLPE, krō'sen-stōl'pe, MAGNUS JAKOB VON (1795-1865). A Swedish publicist and author, born in Jönköping. He became editor of *Ställningar och förhållanden* in 1838 and for publishing therein certain expressions against the government was imprisoned from 1838 to 1841. He is best known for his his-

torical fiction, such as *Morianen* ('The Moor,' 1840-44) and *Carl Johan och Srenskarne* ('Carl Johan and the Swedes,' 1845-46). Consult Ahnfelt, *Magnus Jakob C.* (2 vols., 1880-81).

CRUSHING MACHINERY. See GRINDING AND PULVERIZING MACHINERY.

CRUSIUS, krō'sē-us, OTTO (1857 -). A German classical scholar, born at Hanover. He became professor at the University of Heidelberg in 1898 and at Munich in 1903. His works include: *Zur griechischen Religionsgeschichte* (1886); *Untersuchungen zu Herondas* (1892); etc. He edited *Philologus*; *Herondas* (1901); *Fabeln des Babrius* (1897); and *Griechische Lyriker* (1897 et seq.). Since 1910 he has, with others, published several volumes of *Das Erbe der Alter Schriften über Wesen und Wirkung der Antike* (Leipzig).

CRUSOE, krō'sō, ROBINSON. See ROBINSON CRUSOE.

CRUSQUE, JACQUES DE. See Latinized form CRUCIUS.

CRUSTA'CEA (Neo-Lat. nom. pl., from Lat. *crusta*, crust). A class of gill-bearing aquatic arthropods, differing from other Branchiata in having five pairs of appendages on the head, the first two of which are antennae, and in having all of the limbs except the first pair of antennae biramous.

Structure. The Crustacea derive their name from the hard armor which in most of them covers the whole body, forming a complex exoskeleton, calcareous and intermediate between shell and bone in the higher forms, while in the lower and smaller kinds it consists principally of chitin and corresponds more nearly in its nature with the integuments of insects. It is secreted by the epidermis on its outer side and serves not merely for protection, but also for the attachment of the muscles. Its color is dependent upon the absence or presence and amount of pigment, which is also a product of the epidermis and is formed during the growth of the skeleton. These pigment cells are often very ornamental, especially under the microscope, as their shape is beautifully and very irregularly stellate. Usually, however, the pigment is so abundant as to make the body wall opaque and the individual pigment cells are no longer visible. The mineral matter of the skeleton is chiefly carbonate of lime. The smallest crustaceans have little or none in the skeleton, but in all of the larger forms it is present in greater or less abundance. In the so-called "stone crabs" so much is present that the skeleton is really as hard as a rock. In all cases, however, where the skeleton covers a joint it is thin and free from mineral matter, thus permitting perfect freedom of movement. The bristles and hairs often found on the outside of the skeleton are of the same essential structure as it and have a central core of epidermis. In barnacles (q.v.), ostracods, water fleas (q.v.), and a few other crustaceans, there is, in addition to the external skeleton, and formed as an outgrowth of it, a true shell, whose only function is protection. This shell may consist of several pieces, as in barnacles, or be strictly bivalve, as in water fleas, and it may be wholly chitinous or very firmly calcified. Sometimes it is capable of inclosing the entire animal, but often it only seems to protect certain parts. It is usually hinged along the dorsal side of the animal, where it is attached to the skeleton and is supplied with muscles for closing it.

The crustacean body is composed of segments, some very distinct, while others coalesce or are consolidated, of which the thorax of a crab affords an excellent example. The first five rings are regarded as forming the head, the next eight the thorax, when that part of the body is separable from what follows.

Epidermis and Molting.—The crustacean covering has beneath it a true skin and, like the epidermis, is cast off from time to time and supplied anew, as the growth of the animal requires more room for the internal parts. In this molting or casting of the shell the animal divests itself of its covering, not in separate parts, but in one piece, including the coverings of the limbs and even of the antennae, although the membranes which connect the hard plates are split and torn. A period of apparent sickness precedes, and agitation accompanies the process; and the thick muscular parts of the limbs of crabs and lobsters become soft and flaccid, so as to be more easily extricated from their hard covering. The loss of a limb, which sometimes takes place in this process and is otherwise a frequent occurrence, is easily repaired, for a new one grows in its stead; but it is a curious circumstance that in order to this reproduction the limb must be broken off at a particular joint, the second from the body, thus leaving only a short stump, and when a limb is broken elsewhere, the animal itself exercises the remarkable power of throwing it off by this joint.

Locomotive and Other Organs.—The principal organ of locomotion in many Crustacea, as in the lobster, shrimp, etc., is the abdomen, terminating in fanlike appendages; by bending the abdomen suddenly down under the body, the animal darts backward in the water. The limbs, which are connected with the thoracic rings, are, in some, organs of swimming; those of others are used for walking at the bottom of the water or on dry ground. Some have "swimming feet" or pleopods attached to the abdomen, often very different from the thoracic legs. The legs of some are fitted for burrowing. The first pair of legs is not infrequently transformed into a pair of powerful pincers or "claws," the last joint but one being prolonged so as to oppose the last joint, which becomes attached as to the side of it, and these are used for seizing and tearing food. The first pair of appendages are organs of touch called "antennules"; following these are the antennae, also sense organs, then come a pair of powerful jaws, the mandibles; and back of these are two pairs of accessory jaws, the maxillae. The thoracic feet, which follow in regular order, are sometimes modified to function as jaws and are then called "maxillipeds." In some forms the mouth parts are greatly modified to form sucking instead of masticating organs. The digestive organs are very simple: there is a short but capacious gullet, a large stomach, and a straight and simple intestinal tube. A well-developed digestive gland called the "liver" is often present. The pyloric region of the stomach is sometimes furnished with a remarkable apparatus of hard tubercles or sharp teeth for grinding or tearing food. Many of the Crustacea feed on animal food and are very voracious; many, however, feed on vegetable food. The nervous system of crustaceans agrees generally with that of other anthropods and exhibits many gradations of concentration. The

eyes are either simple (ocelli), aggregate (consisting of several ocelli under a common cornea), or compound; and the compound eyes are often elevated on stalks. Besides eyes some crustaceans have ciliated pits or cavities that seem to be sense organs, perhaps for smell or taste. Others have otcysts or positional organs, but it is doubtful whether any have the sense of hearing. In some Schizopoda there are also "accessory eyes" on the basal points of certain thoracic feet and in the middle line of the abdomen. The gills are variously placed, on the sides of the body, or on the thoracic limbs, on the abdominal legs, etc. The heart is always in the middle line of the body on the dorsal side, is of variable form, and distributes the blood by a number of trunks through the system; but the blood returns to venous sinuses, from which, and not from the heart, it is sent into the gills, and it is not until after its aeration in the gills that it comes to the heart again.

Reproduction and Ecology. The sexes are distinct in most Crustacea, and all are oviparous. The eggs are almost invariably hatched in water, even those of terrestrial forms, and a sort of incubation often takes place, as the eggs are carried about under the abdomen or thorax of the female, attached to the pleopods or other appendages. Except in a few cases the development takes place by metamorphosis, through a very remarkable series of larval stages. All the lower Crustacea hatch as minute, oval, unsegmented creatures with three pairs of appendages, and this larva is called a "nauplius." Although the higher Crustacea hatch as a more highly organized form called "zoaea," and later pass through an intermediate larval form, the "megalops," all pass through a nauplius stage in the egg. See BARNACLE for illustration of nauplius, and see CRAB for illustrations of zoaea and megalops.

More than 10,000 species of living Crustacea are known, of which the greater number are marine, some inhabit fresh waters, running or stagnant, comparatively few are terrestrial. Many exhibit a high degree of intelligence. The Crustacea constitute, in an economic sense, perhaps the most important group of invertebrates. The myriads of the smaller forms that drift about the ocean and the great lakes furnish the greater part of the fare of the important food fishes and are thus indirectly of value to mankind. In the economy of the ocean itself Crustacea are also of great importance, for they act as the natural scavengers of the sea.

Classification and Phylogeny. Classification of the Crustacea is based upon the number and manner of consolidation of the segments of the body and upon the number and character of the appendages. There are three large groups, (I) Trilobita, (II) Entomostraca, and (III) Malacostraca (qq.v.), which may be considered to constitute subclasses. The principal characters of these subclasses and their component orders, together with some notes of the geological history of the groups, are here briefly given.

I. TRILOBITA. This is an extinct group of Crustacea that lived during Paleozoic time only. No near relatives are known, though they exhibit some affinities with the Phyllopoda. The body consists of three regions—head, thorax, and abdomen—and it is further divided by a raised median dorsal ridge into three longitud-

inal lobes from which character the group derives its name. The thorax has a variable number (2 to 19) of segments that are so articulated as to enable the animal to coil itself more or less closely after the manner of an armadillo. The trilobites constitute a very primitive group of Crustacea, and, as their remains are found in the oldest sedimentary rocks, they were among the earliest inhabitants of the earth. They are of great importance to the geologist, as the various species are very characteristic of the particular layers of rock in which they occur, and for this reason they will be more fully described in an article under their own name.

II. ENTOMOSTRACA. The members of this subclass present a great variety of form and habit of life, but they are alike in the variability of the degree of segmentation of the body. They are with few exceptions small, and all are aquatic. They are divided into four orders. 1. In the order *Phyllopoda* the segmentation is distinct, the anterior portion of the body is covered by a cephalic shield, and the thoracic appendages are leaflike, this latter character giving the group its name. In some phyllopods, as *Apus*, and the brine shrimps (*Branchipus* and *Artemia*), the body is elongated, well segmented, partly covered by a single dorsal shield and divided into three regions. In other genera, as *Daphnia* and *Ethieria*, the body is not well segmented and is inclosed in a bivalve shell articulated by a hinge at the dorsal median line. The phyllopods are doubtfully represented in the Cambrian rocks. One genus, *Ethieria*, has enjoyed a remarkably long life period, since it has existed from Devonian to recent times. During the Devonian and Carboniferous periods the Phyllopoda abounded in the brackish waters of the coastal swamps, in the rocks of the Tertiary era the members of this order are less common. A single doubtful representative of the suborder Cladocera, the genus *Lyncetes*, has been found in the Carboniferous rocks. 2. *Ostracoda*.—In this order the animals are all small, mostly microscopic, and with the body inclosed in a hinged bivalve shell that can be tightly shut by a specially developed adductor muscle. These animals occur by myriads in the modern ocean, seas, and lakes, mostly swimming near the surface of the water, and they seem to have lived in equal abundance in the seas of past time, for their fossil shells are common in all the aqueous rocks from those of Cambrian to those of recent time. Their greatest expansion was in the Ordovician and Silurian, and again in the Carboniferous and Cretaceous periods. Examples are *Beurcheia*, *Leperditia*, and *Cypris*. 3. *Copepoda*.—These are all recent forms, with elongated well-segmented bodies in all except the degenerate parasitic members of the order. The limbs of the free-swimming species are biramous; those of the parasites are greatly reduced in size or entirely wanting. Examples: the water flea (*Cyclops*), the fish lice (*Lernæa*), and carp lice (*Argulus*). 4. *Cirripedia*.—In this order, the barnacles, we see perhaps the most aberrant of all crustaceans. Because of the usual sessile habit of life, the body of the animal has suffered so great modification that only the study of the developmental stages shows that the peculiar forms of the adult barnacles are acquired after passing through a series of larval stages exactly parallel to those of other Entomostraca. The

body of the adult is attached by the head. It is inclosed in a leathery integument that develops articulated calcareous plates and is raised upon a peduncle as in the goose barnacle (*Lepas*); or it may be contained in a calcareous box made of a series of stony plates firmly joined to each other and to the foreign object that serves as a support, as in the acorn shell (*Balanus*). The earliest members of the order, *Turrilepas* and *Pumilus*, appeared in Cambrian and Ordovician time, and were ancestors of *Lepas*, while the oldest relative of *Balanus*, viz., *Palæocrassia*, occurs in the Lower Devonian rocks, and the genus *Balanus* itself has been found in the Mesozoic and Tertiary deposits. The Cirripedia afford the largest examples of Entomostraca in some of the goose barnacles that attain a length of 8 or 9 inches, and they furnish also the most degenerate forms in those Rhizocephala that live as parasites in the bodies of crabs. See BARNACLE; COPEPODA; OSTRACODA; PHYLLOPODA; ENTOMOSTRACA; and Plate of BARNACLES.

III. MALACOSTRACA (crabs, lobsters, etc.). The most commonly known, the largest, and the most highly organized Crustacea belong to this division. The body consists of a constant number of segments (20 or 21), distributed between the head (5), the thorax (8), and the abdomen (7). In most of the orders the head and thorax are fused to form a cephalothorax of 13 segments, and each segment bears a pair of appendages, all of which are usually well differentiated to perform special functions. The compound eyes are stalked in all orders except the Cumacea and Arthrostraca. 1. The order *Phyllocarida* was much more fully represented in Paleozoic times than it is now by such genera as *Ceratiocaris*, *Echinocaris*, *Pephracaris*, etc., in which the cephalothorax was covered by a hinged bivalve shell provided with an adductor muscle like that in the bivalve phyllopods and the ostracods. The order enjoyed a long life period, as it first appeared in the Upper Cambrian, and it lasted to the end of the Paleozoic. Through the Mesozoic and Tertiary eras the order could not have been very abundant, as no fossil remains referable to it have been found in the rocks of those ages, and the modern genera, three in number, show considerable modifications from their early ancestors. This group presents synthetic types which may have given rise on the one hand to the Phyllopoda, and on the other to the higher Crustacea represented by the Schizopoda and Decapoda. (See PHYLLOCARIDA.) 2. *Schizopoda*.—The animals of this order, the opossum shrimps (*Mysis*), resemble in their general form the shrimps and prawns among the decapods. They are, however, more loosely built, and the thoracic limbs, of which there are eight pairs, are biramous (whence the name), and all alike. These characters mark the group as of primitive rank. Its relation, as one of lower phylogenetic rank, to the Decapoda, is shown by the fact that certain decapods, such as the prawns, pass in their ontogeny, i.e., in their development from egg to adult, through a "mysis stage," in which schizopod characteristics are strongly marked. The fossil genera *Archæocaris*, *Crangonops*, and *Pygoccephalus* from the Carboniferous, and possibly also *Palæocaris* and *Gamphonys*, the latter from the Permian, are the earliest ancestors of the Schizopoda. These all present very primitive characters and are separated from the

modern descendants by the interval of Mesozoic and Tertiary time, from which we have no traces of the group.

3. *Decapoda*.—The character upon which the order (shrimps, lobsters, and crabs) is based is the prominence of the five posterior pairs of thoracic limbs developed as walking feet; the three anterior pairs being adapted as maxillipedes or accessory mouth parts. The first pair of walking feet is usually provided with strong chela, or nipping claws. The cephalothorax is covered by a single firm carapace, which in many crabs is so shaped as to afford a most efficient protective covering for the entire animal, including the legs. The frontal portion of this carapace is produced into an anterior rostrum that is often of considerable length, and the lateral portions are extended downward to cover the gills, which are borne on the bases of the thoracic limbs. The order is divided into two suborders: the *Macrura*, with long-tailed bodies, as the shrimp, prawn (*Palæmon*), and lobster (*Homarus*); and the *Brachyura*, or crabs, with the abdomen reduced and closely applied to the under surface of the cephalothorax. A number of species allied to the hermit crab (*Pagurus*), often distinguished under the subordinal designation *Anomura*, are either *Macrura* or *Brachyura* which, through adaptation to their peculiar habits of life, in occupying the discarded shells of gastropods, have lost the regularity of their thoracic and abdominal segments. The compound eyes of all decapods are raised on stalks, which in many crabs are developed to extraordinary lengths. Some of the largest among Crustacea are found among the decapods. As a rule, the quick-swimming decapods (prawns) may be recognized by the lateral compression of the body, while the bottom crawlers have a more or less flattened form. The crabs are the most highly specialized forms of all Crustacea, and they exhibit many interesting and peculiar adaptations to habit of life. (See CRAB; LOBSTER; PRAWN, ETC.) The early ancestry of the decapods is not well known for those periods previous to Mesozoic time. Some doubtful Paleozoic forms that seem to be transitional between the schizopods and decapods are *Palæopalæmon*, from the Devonian of Ohio, and *Anthrupalæmon*, from the coal measures of Illinois, but during this era the order was greatly subordinated to other crustaceans like the trilobites and ostracods, and to the merostomes, represented by *Eurypterus*. In the Mesozoic of Europe the group attained a great development, and thus continued through the early Tertiary period. Fossil decapod remains are peculiarly sparse in the American deposits of these periods. The Jurassic lithographic slates of Bavaria have afforded large numbers of finely preserved specimens of fossil decapods of many genera and species. Some of these, as *Eryon*, have modern representatives, as *Willemaria*, still living in the abyssal depths of the ocean. Other genera, among them the prawn (*Peneus*), began in the Jurassic and Cretaceous periods and have survived without changes of greater than specific rank throughout the succeeding ages, and are now abundant in the Mediterranean Sea and the Atlantic and Indian oceans. The *Macrura* declined towards the end of Cretaceous time and gave way to the *Brachyura*, which attained great expansion during the Eocene or early Tertiary period. In fact, the crabs were the dominant types of invertebrate

life in many parts of the Tertiary seas of Europe, and their fossil remains are now found in abundance in the rocks that are relics of those seas. The Eocene deposits of the London Clay of England, those of Bavaria and Hungary, and especially those of Vicenza, in northeastern Italy, have afforded the finest specimens, nearly all of which belong to modern families.

4. *Stomatopoda*.—This is a small order comprising nine marine genera, of which the best known is the mantis shrimp (*Squilla*). They have the body loosely built, elongated, and flattened, with an incomplete carapace that leaves the three posterior thoracic segments uncovered, and with a disproportionately large abdomen. The five anterior pairs of thoracic limbs function as maxillipedes, the second pair being much the largest and provided with a spiny terminal segment that folds back upon the penultimate segment, like a knife blade into its handle, to form a very efficient clamping organ. A powerful burrowing organ, developed by the union of the sixth pair of abdominal appendages with the terminal plate, or telson, enables the animal to bury itself in the sandy bottoms near shore. Fossil forms of this group are rare. The earliest, *Necroscylla*, from the coal measures of England, resembles *Squilla*. Another allied genus, *Scudla*, is found in fine preservation in the lithographic slates of the Bavarian Jurassic, and *Squilla* is found in the same horizon and in succeeding horizons of the Cretaceous and Tertiary.

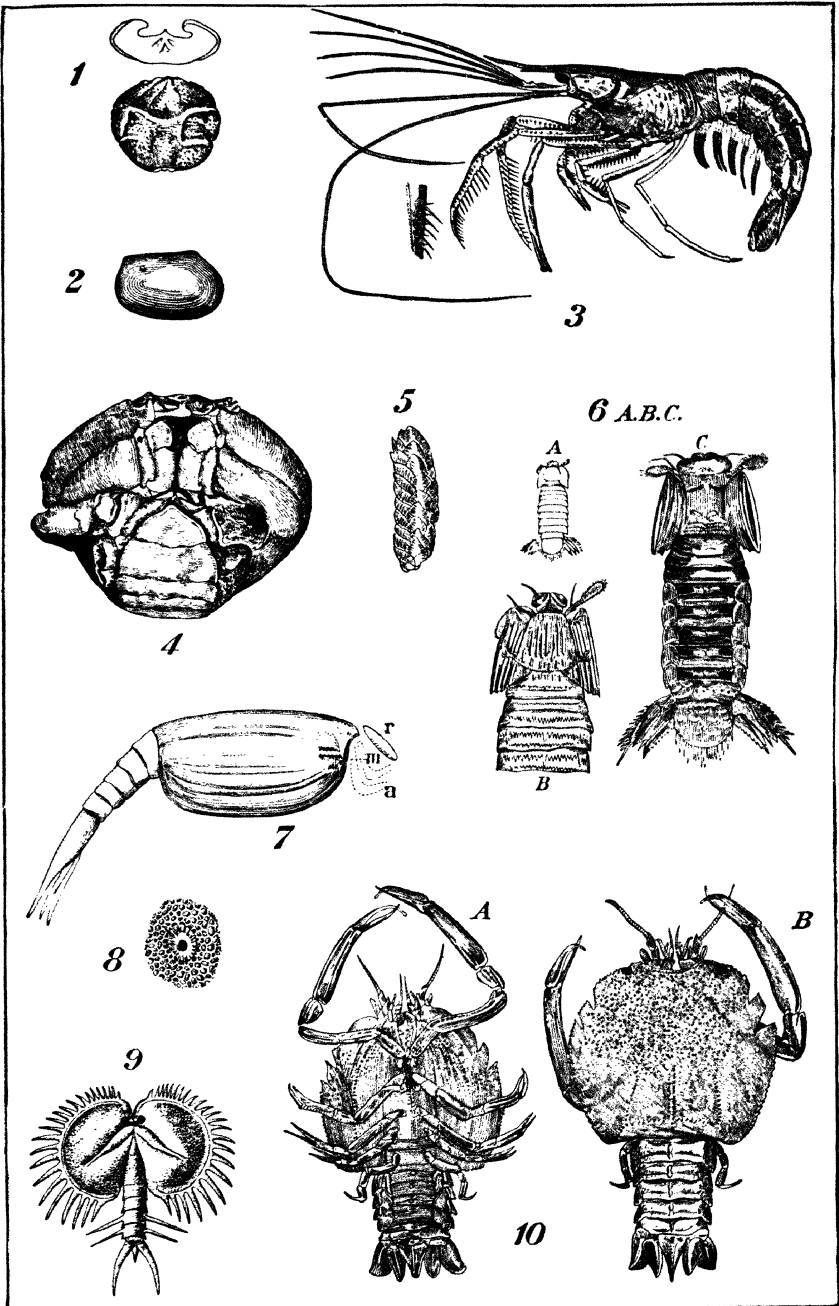
5. *Cumacea*.—Another small order of prawn-like Crustacea, in which the compound eyes are sessile and sometimes fused together or are entirely absent. The carapace is further reduced than in the *Stomatopoda*, for it leaves the five posterior pairs of thoracic segments uncovered. Only two pairs of thoracic limbs function as maxillipedes, and six pairs are legs, of which two or three anterior pairs are biramous. This group is related to the Schizopoda and Isopoda, no fossil representatives of it are known.

6. *Arthrostraca*.—In this large order the fusion of the segments is still further reduced, only one or two of the anterior being united with the head to form a rudimentary cephalothorax. These fused segments bear maxillipedes, while the remaining free segments bear legs that end in claws or are built for swimming. The two suborders are quite different in outward appearances. The Amphipoda have the body laterally compressed and the legs adapted for swimming and jumping, as in the sand fleas (*Gammarus* and *Orchestia*.) The Isopoda have the body dorsoventrally flattened, the legs adapted for crawling, and the abdominal segments are fused to form a single terminal plate.

EXPLANATION OF PLATE OF CRUSTACEA, FOSSIL.

1. *Dromopops*, a round crab from the Upper Cretaceous of Denmark.
2. *Leperditia*, an ostracod; Silurian, island of Gotland.
3. *Agor*, a prawn, Jurassic lithographic limestones, Bavaria.
4. *Xanthopus*, a cyclopetean crab, Eocene, Bavaria.
5. *Turnipops*, a primitive cirriped, allied to the goose barnacle, Silurian; Dudley, England.
6. *Scudla pennata*, a stomatopod, Upper Jura of Bavaria, A, outline of the fossil, B, dorsal view of head, C, ventral view of entire body, showing thoracic and abdominal appendages.
7. *Ceratocaris*, a phyllocard, Ordovician, Lanarkshire, Scotland; showing the bivalve shell, some of the head appendages, and the segmented long abdomen with terminal spines.
8. *Palæocuma*, a barnacle, allied to the acorn shell, imbedded in a fossil coral of Lower Devonian age, New York State.
9. *Pezurus*, a phyllocard with spinose carapace; Chemung; New York State.
10. *Eryon*, a macruran; lithographic limestones of Bavaria; A, ventral aspect; B, dorsal aspect.

CRUSTACEA



The amphipods (see AMPHIPODA) are wholly aquatic, in both marine and fresh water, and are often also found living in the damp slats and jetsam of the beach between low and high tides. The isopods, while generally aquatic, afford some fine examples of adaptation to terrestrial conditions in the wood louse (*Oniscus*) and pill bug (*Armadillidium*), which are commonly found under the bark of dead trees and in other like situations. Paleontologically the amphipods are of little importance. The earliest indisputable ancestor is *Acanthotelson*, of the Carboniferous, and the genus *Gammarus* itself is found in the Tertiary rocks. The isopods are better known in a fossil state, and the ancestors seem to have been, as a rule, of larger size than the recent forms. *Arthropleura* of the Carboniferous attained a length of about 20 inches. *Praetetus*, also a large form, from the Old Red Sandstone of the English Devonian, is the earliest isopod known. *Archoniscus*, *Cyclo-spheroma*, and *Eosphaeroma* are other genera from the Mesozoic and Tertiary rocks that are closely allied to modern forms.

Geological Distribution. The accompanying table indicates in a rough way the larger classi-

GEOLOGICAL DISTRIBUTION OF THE CRUSTACEA	Periods											
	Paleo.	C.	M.	D.	C.	P.	T.	J.	G.	E.	M.	P.
TRILOBITA												
ENTOMOSTRACA												
I Order Phyllopoda												
Suborder Euphyllopoda												
Suborder Cladocera												
II Order Ostracoda												
III Order Copepoda												
IV Order Cirripedia												
Suborder Eucirripedia												
Suborder Anzozepoda												
MALACOSTRACA												
I Order Phyllocarida												
II Order Schizopoda												
III Order Decapoda												
Suborder Macrura												
Suborder Brachyura												
IV Order Stomatopoda												
V Order Cumacea												
VI Order Amphipoda												
Suborder Amphipoda												
Suborder Isopoda												

HISTORICAL VIEW OF CRUSTACEA.

fication of the Crustacea and the distribution and expansion of the various subdivisions in past geologic times. It shows that certain types, especially the more primitive, played more important rôles in the early ages than they do at present, and that they have been superseded by the more specialized types. The letters at the heads of the vertical columns indicate the geological systems as follows: C, Cambrian; O, Ordovician; S, Silurian; D, Devonian; Cb, Car-

boniferous; P, Permian; T, Triassic; J, Jurassic; Cr, Cretaceous; E, Eocene; M, Miocene; Pl, Pliocene; R, Recent. An interrogation point indicates the doubtful presence of a member of the group, and the width of the black line indicates in a very imperfect way the relative amount of expansion of the group. The articles on the different orders and suborders should be consulted for further information.

Bibliography. The best general introduction to the study of the Crustacea is T. H. Huxley, *The Crayfish: An Introduction to the Study of Zoology*, in "International Scientific Series" (New York, 1884), and the most interesting and comprehensive account of the whole group is Calman's *The Life of Crustacea* (ib., 1911). Other works of a general nature on the morphology and classification are: J. S. Kingsley, "The Classification of the Arthropoda," in *American Naturalist*, vol. xxviii (Philadelphia, 1894); K. Grohen, "The Genealogy and Classification of the Crustacea," in *Annals and Magazine of Natural History*, 6th series, vol. xi (London, 1893); T. R. R. Stebbing, *History of the Crustacea* (New York, 1893); R. Rathbun, "Natural History of the Economic Crustaceans," in *Bulletin United States Fish Commission* (Washington, 1889); H. Milne-Edwards, *Histoire naturelle des crustacés* (3 vols., Paris, 1834-40); H. Gerstaecker, "Glüderfüßler," in *Bronn's Klassen und Ordnungen des Thierreichs*, vol. v (Leipzig, 1866-94). Consult also Cornish, *Crustaceans* (London, 1883); Rankin, *The Northrop Collection of Crustacea from the Bahamas* (Lancaster, Pa., 1898); id., "The Crustacea of the Bermuda Islands," in *Annals of New York Academy of Sciences*, vol. xii (New York, 1900); Sharpe, "Report on the Fresh-Water Crustacea of the United States National Museum," in *Proceedings of the United States National Museum*, vol. xxvi (Washington, 1903); Paulmier, "Higher Crustacea of New York City," in *State Education Department* (Albany, 1905); Smith, "Crustacea," in *Cambridge Natural History*, vol. iv (London, 1909); Calman, "Crustacea," in *Lancaster's Treatise on Zoology*, vol. vii (ib., 1909); Stappers, *Crustacés malacostracés* (Brussels, 1911). For description of the fossil forms, consult the various manuals of paleontology, such as those by Zittel-Eastman, Bernard, Nicholson, and Etheridge. A good synopsis of the class, dwelling more especially on the fossil forms, is to be found in Zittel-Eastman, *Text-Book of Paleontology* (New York and London, 1900), where are given very useful bibliographic lists of works on both recent and fossil forms.

CRUST OF THE EARTH. It was formerly believed by scientists that the interior of our globe is in a state of fusion due to excessive heat, and they accordingly gave the name "crust of the earth" to the external solid portion of the earth with which we are familiar. Modern investigation has tended to show that the interior of the earth may not be liquid, as this term is ordinarily understood, and the term "crust of the earth," suggesting, as it does, the liquidity of the earth's interior, has fallen somewhat into disfavor among scientists. The term "lithosphere," meaning "rock sphere," has been proposed as a substitute, but in popular usage it has not displaced the earlier term. The crust of the earth is composed of igneous and sedimentary rocks. The rocks occurring deepest below the surface, chiefly of the Archæan age,

are igneous. Resting on them, and forming the surface rocks for much of the globe, are sedimentary rocks, which have everywhere the same general geological succession, although varying widely in minor stratigraphy and structure. The basal igneous rocks, owing to erosion, are now exposed at the surface over considerable areas, and later igneous rocks are associated with the sediments which they have invaded by deep-seated or volcanic processes.

The rocks of the earth's crust are fractured and folded, the folding involving an actual plastic deformation or "flowage" of the rock mass. It is probable that fractures are confined to the outer portion of the earth's crust, while at a considerable depth, perhaps 10,000 meters or more, the pressure is so great that fractures cannot be developed, and the rock is deformed by flowage. For convenience in discussing its structure, Van Hise has accordingly proposed a division of the earth's crust into (1) a deep-seated zone of flowage, where rocks are deformed by flowage and where fractures cannot exist; (2) an upper zone of fracture, where the rocks are deformed by fracture alone, and (3) an intermediate zone of fracture and flowage. By surface erosion rocks which have been deformed in the zone of flowage may ultimately reach the surface of the earth, and hence it is that we have, side by side, the effects of deformation in all zones. Consult Van Hise, "Principles of North American Pre-Cambrian Geology," in *Nineteenth Annual Report United States Geological Survey*, part 1 (Washington, 1896). See GEOLOGY: METAMORPHIC ROCKS.

CRUVEILHIER, kru'vèl'yè', JEAN (1791-1874). A French anatomist. He was educated in the University of Paris and became professor of pathological anatomy at Montpellier in 1824 and at Paris in 1836. His publications include: *Essai sur l'anatomie pathologique en général* (1816); *Anatomie descriptive* (1834-36); *Anatomie pathologique du corps humain* (2 vols., 1828-42); *Anatomie du système nerveux de l'homme* (1845); *Traité d'anatomie pathologique générale* (5 vols., 1849-64); *Traité d'anatomie descriptive* (3 vols., 1833-38; 5th ed., 1872-79).

CRUVELLI, kry-vèl'li, SOPHIE, COUNTESS VIGIER (1826-1907). A German singer. Her real name was Crüwell. She studied under Bordogni in Paris, made her début in Venice in 1847, and sang with increasing success in various Italian theatres and afterward in London and Paris. Endowed with a contralto voice of great strength and purity, she was one of the most popular vocalists of her time. On marrying Count Vigier, in 1856, she left the stage and thereafter lived at Nice.

CRUX (Lat. *crux*, a cross). A southern constellation, commonly known as the Southern Cross. It is situated near the Antarctic circle and therefore never visible in northern latitudes. It consists of four bright stars, to which fancy, aided by Christian associations, gives the cruciform shape. The two brilliant stars which mark the summit and foot of the Southern Cross have nearly the same right ascension. The constellation, therefore, is almost vertical when passing the meridian, and these two stars act as pointers to the Antarctic Pole.

CRUYS, krois, or **KRUYS**, CORNELIS (1657-1727). A Russian rear admiral of Norwegian extraction. He entered the service of Peter the Great in 1698 and rose to be a vice admiral and

vice president of the Russian Admiralty Board. He served Peter faithfully in the wars with Sweden and Turkey, but was hampered by the jealousy of the native Russian officers, and in 1714, after an unsuccessful encounter with some Swedish vessels, he was arrested and tried by court-martial. Sentenced to death, he was reprieved by order of the Czar and exiled to Kazan, but later in the year was recalled and restored to his office. As chief assistant to Count Apraxin (q.v.), Cruys did much to build up the Russian navy. He promoted the building of dockyards, canals, and the drawing up of charts. At the time of his death, in 1727, he owned a large estate at Kexholm and the island of Birken in Finland. In memory of his work, the Russian men-of-war still fly a white flag with a blue cross (*kruis*). Consult "The Russian Fleet under Peter the Great," in *English Navy Records Society* (London, 1899), and Browning, *Peter the Great* (ib., 1898).

CRUZ, kros, JOSÉ MARÍA DE LA (1801-75). A Chilean general. He was born at Concepción and became a member of the Republican cadet class when 10 years old. In 1838 he became chief of staff in the Peruvian campaign, was twice appointed Minister of War, and in 1842 was elected Governor of Valparaíso. In 1851, defeated as the candidate of the Liberals for the presidency, he organized a revolution which terminated in the disastrous defeat of Loncomilla (Dec. 8, 1851), and was followed by his retirement from public life.

CRUZ, JUAN PANTOJA DE LA. See PANTOJA DE LA CRUZ, JUAN.

CRUZ, kros, SAN JUAN DE LA (1542-91). A great Spanish mystic, born at Fontiveros. His real name was Juan de Yepes y Alvarez, but upon entering the Order of the Carmelites (1563) he assumed that of de la Cruz ('of the Cross'). St. Theresa was then engaged in the reformation of the Order of Carmel, and San Juan became her ardent disciple. His efforts brought him into constant trouble, and into one imprisonment of seven months, and he was practically in exile at the time of his death. He was canonized in 1726. The many writings of Juan de la Cruz in prose and verse contain some passages of great beauty and others of untranslatable vagueness, but wonderfully harmonious. In his *Obras espirituales* Spanish mysticism finds its loftiest expression. Many of his poems have been translated into English by Arthur Symonds. His best single works are *Yoche oscura del alma* and *Subida del Monte Carmelo*. His works, published first at Barcelona in 1580, were translated into French by P. Maillard in 1694 and have frequently been reprinted. Consult M. Domínguez Berruete, *El misticismo de San Juan de la Cruz en sus poesías* (Madrid, 1894), and R. Encinas y López de Espinosa, *La poesía de San Juan de la Cruz* (Valencia, 1905).

CRUZADA, kros-zá'dá or -zà'dá. BULL OF THE. This was one of many special dispensations from the rigors of Lenten abstinence and was originally granted for war against the Moors. Later it was practically forced upon the people for a money consideration and became a regular source of considerable revenue. It was promulgated by Pope Pius II, who reigned from 1458 to 1464. By a brief dated at Rome, Jan. 28, 1555, Pope Julius III conceded to His Catholic Majesty the sale of the Bull of the *Cruzada*. The Cortes

more than once complained of the Bull and claimed the prerogative of deciding for themselves whether the Bull should be published or not. They also claimed that if the Bull were to be sold, the purchase must be purely voluntary and not forced, as has been asserted, on the people by itinerant friars who kept congregations for days in church and refused absolution to all who did not buy. Those who sold the Bull were known as *bulderos*. The abuses practiced in the sale were frequently the subject of witty, satirical works. The sale by the King of Spain was also a stock subject for a quarrel between the King and the Pope. Pius IV withdrew the right, and Pius V renewed it.

CRUZ CANO Y OLMEDILLA, krōth kã'nō ē ōl'mã-dēl'yã, RAMÓN FRANCISCO DE LA (1731-94), commonly known as DON RAMÓN DE LA CRUZ. The most important dramatist produced by Spain during the eighteenth century; also a poet. He essayed nearly every kind of drama—tragedy, tragic-comedy, comedy drama, comedy, farce, comic opera, and, last of all, the *sainete*, a short, witty piece, with little or no plot (since its length, of one act, forbade), that gives a faithful picture of some little scene in everyday life. This *genre* is the further development of the older *pasos* and *entremeses*, and in Cruz's hands forms the natural bridge between rigid classicism and elastic romanticism in things dramaturgic. In his early days Cruz attempted the classic drama along lines strictly classic and even carried his admiration thereof so far as to imitate in some cases, and to translate in others, certain French and Italian plays. But in the *sainete* he was himself, and a Spaniard, with no debts to foreign influences or models. The effect of this lesson in patriotism and independence was later felt even in serious drama, and thus prepared the way for the modern renaissance of the drama in Spain. Before the time of Cruz the *zarzuela* (a kind of Spanish comic opera) had been the pastime almost exclusively of the rich. Not the least of Cruz's achievements was its democratization as we now know it. During 30 years he kept the Madrid theatres supplied with his plays, at a time when long runs were unknown, and runs even of a week practically unheard of. His productivity caused one of his editors to call him the Lope de Vega of the eighteenth century. We know the titles of more than 500 of his plays, of which number nearly two-thirds are still imitated. Although Cruz realized the importance of what he was doing (as shown by his celebrated phrase, "Truth dictates and I write"), posterity long failed to recognize him as a master. Only in relatively recent years have we come to realize that his works are an inexhaustible source of information concerning Spanish life in his period, and that he is entitled to be called, as he has been, "the Goya of the theatre." Consult: Cruz y Cano, *Teatro* (10 vols., Madrid, 1786-91); *Colección de sainetes*, etc., ed. of A. Durán (2 vols., ib., 1843); *Sainetes inéditos*, etc., ed. of C. Cambrero (ib., 1900); *Sainetes desconocidos* (1st series, ib., 1906); Pérez Galdós, "Ramón de la Cruz y su época," in *Revista de España*, (1870-71); Cotarelo y Mori, *Ramón de la Cruz y sus obras* (ib., 1899); Pérez y González "Cuatro sainetes 'anónimos' de Don Ramón de la Cruz," in *Ilustración Española y Americana*, vol. lxxxiv (1907).

CRUZ E SILVA, ANTONIO DINIZ DA. See DINIZ DA CRUZ E SILVA, ANTONIO.

CRUZ Y GOYENECHE, krōs ē gō'yã-nã'chã, LOUIS DE LA (1768-1828). A Chilean general. He was born at Concepción, where he held several municipal offices. His exploration of the Andes in 1806 resulted in the discovery of several important mountain passes, which are described in a report published in the *Angelia* collection at Buenos Aires in 1835. Four years after his famous Andean expedition, he became a member of the revolutionary junta of Concepción, but was captured during the ensuing campaign and imprisoned until 1817. He was afterward for a time acting President of Chile and upon the outbreak of the Peruvian campaign joined San Martín's army (1820), advancing to the rank of grand marshal. Shortly before his death he was appointed Minister of Marine.

CRYING BIRD. See COURLAN, LIMPKIN.

CRYOHYDRATES. See FREEZING POINT.

CRYOLITE (Gk. κρύος, *kryos*, frost + λίθος, *lithos*, stone). A sodium and aluminum fluoride that crystallizes in the monoclinic system. It is found chiefly in west Greenland, near Arksuk, where it occurs as a large bed in a granite vein, and in El Paso Co., Colo. Cryolite is an important ore of aluminum (q.v.) and is used in the manufacture of alum, sodium hydrate (for making soap), sodium carbonate, and other salts. It is also employed in the making of an opaque white glass, sometimes called hot-cast porcelain, which is said to be prepared by fusing together 100 parts of silica, 35 parts of cryolite, and 15 parts of zinc oxide.

CRYOPHORUS (Neo-Lat., from Gk. κρύος, *kryos*, frost + φέρειν, *pherein*, to bear). An instrument consisting of a glass tube with a bulb at both ends, from which the air has been exhausted. A little water is present in one of the bulbs, and when the second bulb, containing only water vapor, is placed in a freezing mix-



CRYOPHORUS

ture, the vapor condenses, thus producing a diminution of pressure, which causes more vapor to rise from the water in the first bulb. The result of this evaporation from the first bulb is the abstraction of much heat, and eventually the remaining water freezes.

CRYOSCOPY. See MOLECULES—MOLECULAR WEIGHTS.

CRYPT, kript (Lat. *crypta*, Gk. κρύπτη, *kryptē*, crypt, vault, from κρύπτειν, *kryptein*, to hide). In its ancient meaning, a subterranean chapel in the catacombs; hence, in more general usage, a chamber under a church, wholly or partly subterranean. The crypt was the logical enlargement of the confession (q.v.), which became a crypt when so expanded as to provide space for an altar. This expansion progressed, with the development of ecclesiastical architecture, until in many cases the crypt occupied the entire space under the choir and apse. It was reached from the church by a single or a double staircase, usually in the neighborhood of the high altar, in the nave or

side aisles. Although some crypts existed as early as the sixth century, it was not until the Carolingian period (ninth century) that such chambers attained to any size; but from that time until the thirteenth century they formed a very important part of church architecture, especially of the Romanesque style. In rare instances they extend under the entire body of the church, including nave and aisles, as in St. Eutrope at Saintes, the cathedral of Otranto, San Niccolò, Bari, and certain concentric churches of the Holy Sepulchre type, such as St. Bénigne at Dijon. Crypts were invariably and almost of necessity vaulted, usually with groin vaults carried on rows of columns or, in Romanesque and Gothic examples, on heavy round or clustered piers. In a number of important churches great height is secured for the crypt under the choir by raising the floor of the choir considerably above that of the nave, with picturesque effect. Sometimes the change of level is so great that the centre of the crypt opens widely upon the nave by one long central stairway, and two side staircases ascend to the choir. In such cases the crypt is apt to be a very monumental structure. Such are the crypts of San Zeno at Verona, of San Miniato at Florence, of the cathedral of Arezzo, of the abbey church of St. Denis, of the cathedral of Strassburg (the largest in Germany), and many others. Some German churches, having a choir at the west as well as east end, had crypts under both choirs, as in the cathedral of Bamberg. In England the finest crypt is that of Canterbury: next to it, that of Glasgow Cathedral. It is not always easy to draw a clear distinction between such crypts and the lower church or undercroft of two-storied edifices like St. Francis at Assisi, the Sainte-Chapelle (Paris), and the church of Schwarz Rheindorf. Crypts are not only interesting in themselves, and from their great variety of plan and arrangement, but also because, on account of their protected subterranean situation, they have suffered less from vandalism than the more exposed structures aboveground and are often the only remaining part of a mediæval church. The age of cathedral building of the Mendicant orders, in the twelfth and thirteenth centuries, put an end to the building of crypts, because the cardinal idea of this era was to provide immense interiors on a single level for large congregations, instead of interiors divided by a raised choir into two sections.

CRYPTO-CALVINISTS. A name given to Melancthon and those who agreed with him in wishing to unite the Lutherans and Calvinists, and especially in his supposed leaning towards the Calvinistic view of the Lord's Supper as shown in the difference between the original and the altered Augsburg Confession (q.v.). The former said "The body and blood of Christ are truly present in the Lord's Supper in the form of bread and wine and are there distributed and received by the communicants; therefore the opposite doctrine is rejected." In the latter the last clause is omitted. Luther did not approve the alteration, but tolerated Melancthon's change of doctrine. Many, however, called him a Crypto-Calvinist. The truth seems to have been that he did not consider that either opinion was a sufficient bar to communion with Christ and therefore thought that both of them ought to be allowed. The con-

troversy was becoming violent before his death, but afterward it broke out with great virulence, and continued with alternate success on each side for 50 years, during which time frequent attempts were made to suppress the Calvinistic opinions by imprisoning their leading advocates and at last, in 1611, by the execution of Chancellor Nicolas Crell. The term has also been applied to the Missouri Lutherans because of their acceptance of the doctrine of unconditional election. Consult Richard, *Philip Melancthon* (New York, 1898).

CRYPTOGAMS (from Gk. κρυπτός, *kryptos*, hidden + γάμος, *gamos*, marriage). A general term that includes all plants below the spermatophytes (seed plants), i.e., the pteridophytes (ferns and their allies), bryophytes (mosses and their allies), and thallophytes (algæ and fungi). The name means "hidden sex reproduction," and, in contrast with it, the spermatophytes are often called "phanerogams," which means "evident sex reproduction." The names are not appropriate, since the sex reproduction of cryptogams is "very evident" and that of phanerogams is "very much 'hidden.'" The mistake arose from regarding stamens and pistils as sex organs. The term "cryptogam," however, remains one of great convenience, but the term "phanerogam" is being replaced by the much more significant term "spermatophyte" (seed plant). The old distinction between cryptogams and phanerogams, that the former reproduce by spores and the latter by seeds, is a false one. Both groups produce spores, but the cryptogams do not produce seeds. Since the pteridophytes are distinct from the bryophytes and thallophytes in developing a vascular system, they are very frequently called "vascular cryptogams." For full account, see articles under the different group names.

CRYPTOGRAPHY (Gk. κρυπτός, *kryptos*, secret + γράφειν, *graphein*, to write). The art of writing messages and documents in cipher, intended to be read only by those possessing the key. The use of secret methods of correspondence in important matters of state is of considerable antiquity. Plutarch and Gellius tell of a method employed by Spartan ephors in communicating with their generals abroad, which has received the name of *scutale*, from the staff used in deciphering it. A narrow strip of parchment was first wound spirally upon the staff, its edges just meeting, and the message was then written along the line of jointure. When it was unwound, the broken letters could afterward be read only by rolling the parchment upon a duplicate staff in possession of the general to whom it was sent. This is but one of a large number of mechanical devices for reading secret dispatches, such as papers pierced with holes, to be laid over the document, revealing only such words or letters as compose the secret message.

Cryptography, in its stricter sense of a cipher alphabet formed either by changing the value of the different letters or by substituting for them groups of letters, numbers, or arbitrary symbols if not of Semitic origin, was at least already known to and used by the sacred writers, in its simplest form of using the alphabet in its inverted order. By the Jews this form is known by the name of *Athos*, a word formed from *A*, the first letter of the Hebrew alphabet. *T*, the last letter; *B*, the second; and *S*, the last but one. An instance of its use occurs in Jeremiah

xiv, where the prophet, wishing to veil his meaning from all but the initiated, writes "Shehach" instead of "Babel," using the second and twelfth letters from the end of the alphabet instead of from the beginning. Julius Caesar's "quarta elementorum littera," in which D takes the place of A and E of B, is only a variant of this simplest form of cipher. Suetonius states that a similar method was employed by Augustus. In mediæval and modern times many scholars have turned their attention to cryptography. Among them are John Trithemius, Abbot of Sponheim, in his *Poligraphia* (1500); Anastasius Kircher, and his pupil, Kaspar Schott, whose work, *De Magia Universalis* (Würzburg, 1676), contains a cryptographic table that lies at the foundation of the modern cipher telegraph systems. It consists simply of the alphabet repeated 24 times in horizontal rows, each successive row dropping off one or more letters from the beginning and adding it at the end. Thus, in the second row B stands under A, C under B, etc. In the third C represents A, in the fourth D = A, etc. Thus correspondents have a choice of 24 alphabets, it being necessary only to agree between themselves upon the first or key letter. For diplomatic purposes this form is much too simple, since by the simple mechanical task of making at most 24 versions, any one could decipher dispatches made in this way. Accordingly various methods of complicating the cipher have been tried, one simple and effective way being that which is known in France as the method of Saint-Cyr. It consists in using alternately two or more of these 24 alphabets, the order in which they are to be used being determined by a key word previously agreed upon. Thus, if the key word is "Army," four alphabets are to be used, viz., those in the rows beginning respectively with A, R, M, and Y. Various other elaborations have been sometimes employed, such as arbitrarily changing the sequence of the letters of the alphabet, inserting at regular intervals letters or symbols that have no meaning ("nulls and insignificants," Bacon called them), or using groups of letters to represent separate letters. Of the last-named variety is the famous bilateral cipher of Bacon himself, consisting of various combinations of A and B, arranged in groups of five. Thus, *aabab, ababa, babba* = fly. So used, such a cipher would be but little more difficult to detect than any ordinary set of single symbols. But Bacon went a step further, for the *a*'s and the *b*'s of his groups he substituted two fonts of type, differing so slightly as to present little distinction to the untrained eye. These, called respectively the *a* font and the *b* font, can be used for setting up any ordinary page of printed matter when, by the proper admixture of the two fonts, each successive group of five letters on the page may be made to stand for a single letter in Bacon's bilateral system. The fact that Bacon took a deep interest in cryptograms is probably the origin of Ignatius Donnelly's theory that the Shakespearean plays contain a cipher which, if interpreted, would prove that Bacon wrote them. And recently a still bolder attempt has been made by a certain Mrs. Gallup to apply the bilateral cipher to the early Shakespeare folios, in which, as is generally known, more than one variety of type was used. The general principle involved in Bacon's method—that of representing the whole

alphabet with groups and combinations of two symbols only—lies at the basis of many modern methods of signaling.

It is hardly too much to say that ingenuity and perseverance will solve any code based upon a regular mathematical principle. If the language of the document is known in advance, the relative frequency with which the letters of the alphabet normally occur in that language forms an important initial clue. Thus *e* is the letter of most frequent occurrence, not only in our own language, but in French and German as well. In English the next in order of frequency are *t, a, o, n, i, r, s, h, d, l, c, v, u, m*, etc. Single letters must be either *a, t, or o*. Words of two letters most likely to occur are *of, to, in, it, is, be, he, by, or*, etc. Double letters are most apt to be *ee, oo, ff, ll, or ss*. If there is doubt whether the cipher is in Latin, English, French, or German, the lack of double letters at the end of words suggests that it is Latin; if but few words end with double letters, it is probably French; if double letters are very numerous, it is German. Those who make a science of interpreting cipher documents receive no small assistance from a knowledge of the frequency with which certain symmetrical combinations of letters occur in the vocabulary of a language. Thus, the combination which may be represented for convenience by the formula *abab*, is comparatively rare in English: one may cite *papa, dodo*; in French, *tête, bébé*. The form *abba* is found in *lerel, Pr, réver*. In German, the formula *abba* gives only *Anna, Ebbe, Egge, Esse, Otto*; in French, the formula *abedaba* gives only two words, *cherche* and *quelque*. An interesting example of the relative frequency of letters being used to solve a cryptogram will be found in Poe's tale, *The Gold Bug*.

Consult John Baptist Porta, *De Furtivis Literarum Notis* (1563); Blaise de Vigenère, *Traité des chiffres* (1587); Thicknesse, *A treatise on the Art of Deciphering and of Writing in Cipher* (1772); and among more modern writers, J. L. Klüber, *Kryptographik* (Tübingen, 1809); Romani, *La cryptographie dévoilée* (1875); Fleissner, *Handbuch der Kryptographik* (Vienna, 1881); A. J. Butler's "Elizabethan Cipher-Books," in *Transactions of Bibliographical Society* (London, 1901).

CRYPTURI (Neo-Lat. nom. pl., from Gk. κρυπτός, *kryptos*, hidden + οὐρά, *oura*, tail). An order of birds, the tinamous, occupying a singular position and placed by Stejneger near the Apteryx and certain extinct forms. They are now included in the subclass *Carnatæ*, in the order *Tinamiformes*. They differ from all other *Carnatæ* (q.v.) in the character of the palate, which is like that of the ostrich. The order contains only a single family, of eight genera, which include nearly 70 forms, all confined to South America. See **TINAMOU**.

CRYSTAL. See **CRYSTALLOGRAPHY**.

CRYSTAL CLASS AND CRYSTAL SYSTEM. See **CRYSTALLOGRAPHY**.

CRYSTAL FALLS. A city and the county seat of Iron Co., Mich., about 210 miles (direct) north of Milwaukee, Wis., on the Chicago, Milwaukee, and St. Paul, and the Chicago and Northwestern railroads (Map Michigan, A 2). The courthouse and high-school buildings are noteworthy. The city is of considerable importance commercially as the centre of a lumbering and iron-mining region. *Crystal Falls*

was chartered as a city in 1899 and owns its lighting and water plants. It is governed by a mayor and a unicameral council. Pop., 1910, 3775.

CRYSTAL GAZING. See CRYSTALLOMANCY.
CRYSTALLIN. See GLOBULINS.

CRYSTALLINE LENS (Fr. *crystallin*, Lat. *crystallinus*, Gk. *κρυσταλλινός*, *krystallinos*, from *κρυσταλλος*, *krystallōs*, crystal, from *κρυσταίνω*, *krystanein*, to freeze, from *κρύος*, *kryos*, frost). A biconvex, transparent, solid body, situated immediately behind the pupil of the eye and imbedded in the vitreous humor. Through it the rays of light from any object must pass to reach the retina. The crystalline lens is more convex on its posterior than on the anterior surface, and its shape and consistency vary at different periods of life. In early youth it is nearly spherical and soft; as age advances, it becomes flattened and firm. In the adult human being it measures three-eighths of an inch transversely, and one-sixth of an inch in antero-posterior diameter. The lens is retained in position by a capsule of equal transparency, composed of tissue exactly similar to the elastic layer of the cornea. The lens has no vascular connection with its capsule, but is nourished by means of a very delicate layer of nucleated cells on its surface, which absorb nourishment from the capsule. Opacity of the lens is called "cataract" (q.v.). In rare instances the lens may be entirely absent. It may be dislocated either congenitally or from traumatism.

An increase in the refracting power of the eye for the purpose of near vision is called "accommodation." The mechanism of accommodation is as follows: The ciliary muscle contracts, drawing forward the choroid and ciliary processes and relaxing the zonula. The lens, which had been flattened by the tension of the zonula, assumes, through its own elasticity, a more spherical shape. The posterior surface of the lens alters but little in shape, being fixed rather firmly in place; but the anterior surface becomes more convex, and thus its refracting power is increased. The eye can see objects accurately at every distance between the "far point" (the most distant point of distinct vision for that eye) and the "near point." The near point is situated at that place at which the eye can begin to see clearly the fine print on a page held close to the eye and then moved slowly from it. Between the near point and the eye vision is indistinct, because the ciliary muscle cannot by any effort produce the amount of convexity of the lens requisite for so short a distance.

CRYSTALLINE ROCKS. A term used to include the igneous rocks (q.v.) and the metamorphic rocks (q.v.), both of which classes have a more crystalline texture than that of the sedimentary rocks.

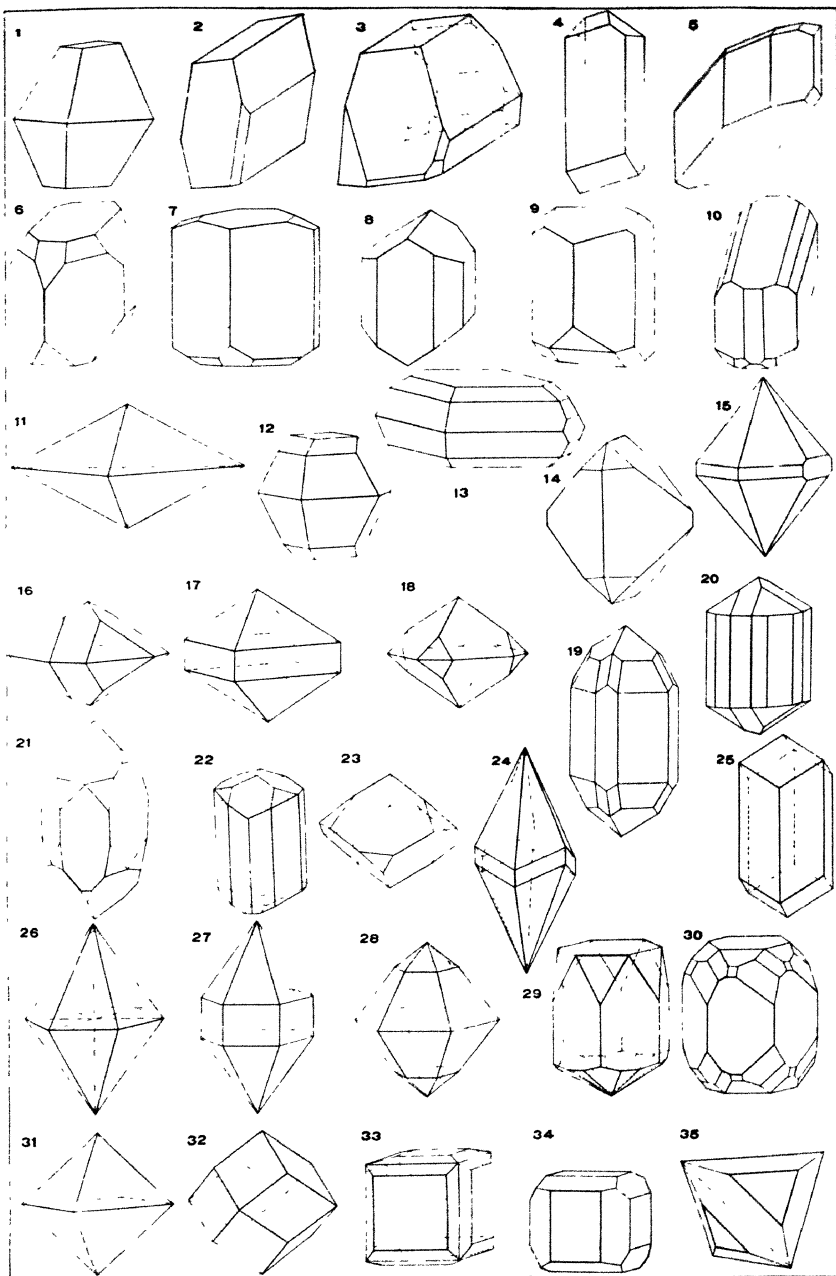
CRYSTALLINE SCHISTS. See METAMORPHIC ROCKS.

CRYSTALLOGENY, kris'tal-loj'e-ni. See CRYSTALLOGRAPHY.

CRYSTALLOGRAPHY (from Gk. *κρυσταλλος*, *krystallōs*, crystal + *γραφειν*, *graphein*, to write). The science which treats of crystals. A crystal is a portion of inorganic matter which has a definite molecular structure and an outward form bounded by plane surfaces called "crystal faces." These crystal faces result from the regular arrangement of the particles of the substance which is undergoing solidification,

every addition of matter to the crystal in the process of formation being piled upon the particles already solidified in much the same manner as cannon balls or oranges are built up into a pile. The reason which we assume for this is that every minute particle of a crystallizing substance, which we call a "crystal molecule," has certain lines of attractive force by which it gathers to itself other crystal molecules of the same substance in much the same way that a magnet attaches itself to a piece of iron or to another magnet. Crystal molecules of different substances have, in general, different lines of attraction, some of which are of different intensity; hence it follows that in most cases the solid formed by the piling together of the crystal molecules of a certain chemical compound has an outward shape which is characteristic of that compound. It is also assumed that the directions of attraction of the unit of crystal accretion, i.e., the crystal molecule, is dependent upon the structure of the chemical molecule of the substance crystallizing, being, it is supposed, made up of a number of chemical molecules grouped together. Hence only elementary chemical substances and definite chemical compounds form crystals. In order that the crystal molecules of a substance may come into sufficiently close proximity to admit of their being mutually attracted along their lines of crystallizing force, it is necessary that they should be crowded together by reason of the contraction of the space in which they are confined. This happens where a mass solidified by cooling, or when by evaporation the amount of a substance dissolved in a liquid, such as water, exceeds in quantity the amount which the solvent can retain in solution under the conditions obtaining. Either of these conditions results in the formation of crystals. A condition of formation more rarely met with is that in which crystals form directly from vapors, as in the case of iodine or chloride of ammonia. By far the best means of studying the formation of crystals is afforded by the evaporation of a solution of some soluble compound, such as salt or blue vitriol, until it is supersaturated, when crystals of the dissolved substance will be thrown down. If two substances, such as salt and borax, are dissolved in the same solution, the result of evaporation will be crystals of both substances, each set of molecules building themselves up in distinctive forms. Solutions show considerable inertness, and it is often necessary to start the process of crystallization by introducing some solid substance—best of all, a crystal of the substance—to form a nucleus for the growing crystal. The outward form—i.e., the solid bounded by plane faces—is only an expression of the regular grouping of molecules which takes place when a substance crystallizes, and consequently we may expect other evidences of this molecular arrangement. These evidences become apparent when we consider the physical properties, such as the transmission of light, heat, and electricity through crystals. A sphere cut from a quartz crystal, e.g., does not expand equally in all directions when heated, as does a sphere of an uncrystallized substance, such as glass or amber, neither does a piece of beryl transmit polarized light in the same way as does a piece of glass of the same shape. This latter property of crystals is of great use in the detection of imitation gems. In the case of the

CRYSTAL FORMS



1-5. TRICLINIC SYSTEM
6-10. MONOCLINIC SYSTEM
11-15. ORTHORHOMBIC SYSTEM

31-35. ISOMETRIC SYSTEM

16-20. TETRAGONAL SYSTEM
21-25. TRIGONAL SYSTEM
26-30. HEXAGONAL SYSTEM

sphere of quartz we find that the action of heat pulls apart the molecules more in one direction than in all other directions, so that the sphere becomes an ellipsoid. Substances which, like glass, show no evidences of crystallization are said to be *amorphous*. A substance in which the molecules have responded to crystallization but in which crystal faces have not been developed is said to be crystalline. Crystalline masses are often the result of the close crowding of crystals to the exclusion of the development of crystal outlines.

Symmetry. Just as in the organic kingdoms we are familiar with unfailling regularity of repetition in parts of a flower or of an organism, as the opposite halves of a leaf or the arms of a starfish, so, as the result of the growth by regular accretions in crystals, we find a symmetrical recurrence of crystal faces corresponding to the lines of attraction of the crystal molecules. This is beautifully illustrated in the familiar snow crystals, which throughout their infinite variety of complex forms show a sixfold grouping; i.e., through the centre of every such crystal there passes an axis of sixfold symmetry. Similarly in a cubic crystal of salt there are axes of fourfold, threefold, and twofold symmetry, about which the crystal edges and angles are grouped in fours, threes, and twos respectively. A plane of symmetry is one which divides a crystal into equal halves, each of which is the reflected counterpart of the other—such a plane as would pass through the opposite edges of a cube. The point within a crystal in which the axes and planes of symmetry intersect is known as the centre of the crystal and is a centre of symmetry; i.e., every line through this point intersects the crystal in similar faces, edges, or solid angles. These elements of symmetry form the basis of the mathematical study of crystals, and from them 32 groups of crystals, divided into six systems, have been mathematically deduced. Any substance of which definite crystals are formed produces forms which show the symmetry of a distinct group, and it is impossible to find in nature a crystal whose symmetry would place it in more than one group. Beginning at the lowest degree of symmetry, the six crystallographic systems are:

The *triclinic system*, based on three inclined axes, corresponding to three nonrectangular and noninterchangeable lines of crystallizing force. Crystals referred to this system, which includes two groups, are symmetrical only to a point.

The *monoclinic system*, based on three non-interchangeable axes, two of which are at right angles and the third inclined to the plane of these. This system includes three groups, all crystals of which show one plane of symmetry.

The *orthorhombic system*, based on three non-interchangeable rectangular axes of twofold symmetry, the highest of the three groups under the system having three planes of symmetry.

The *hexagonal system*, based on three interchangeable axes in the same plane equally inclined to each other (i.e., 60° apart), and one axis at right angles to the other three and noninterchangeable with them. This system includes two subdivisions. (1) the *trigonal*, comprising seven groups, and (2) the *hexagonal*, made up of five groups. The characteristic feature of the system is that the non-interchangeable axis is always an axis of three-

fold symmetry (trigonal division) or of sixfold symmetry (hexagonal division).

The *tetragonal system*, based on three rectangular axes, two of which are interchangeable. Five of the seven groups under this system show fourfold symmetry with respect to the noninterchangeable axis.

The *isometric system*, based on three rectangular interchangeable axes, giving, in the normal group of the five included under the system, the highest symmetry possible.

Crystal Forms. From the fact that in five of the six systems enumerated above, at least one axis, or direction of crystallizing force, is different from the other-, it follows that this difference may vary in degree between substances crystallizing in the same system; e.g., the fundamental six-sided pyramid of beryl is not as steep as the corresponding pyramid of apatite, although both crystallize in hexagonal forms. This characteristic relation constitutes a means of differentiation between substances crystallizing in the same system, so that with a knowledge of these relations, crystals of any substance, except those of the isometric system may be readily recognized from one another. This is done by measuring the angles between the faces of the crystal, these angles being always constant between the same kind of faces, provided the substance is pure and the temperature constant. Instruments for measuring the angles between crystal faces are known as *goniometers* and are of various forms, the more accurate of which depend on the reflection of a beam of light from the smooth surface of the crystal face.

Although the simple action of the crystallizing forces produces comparatively simple geometrical solids, like the cube of salt or the six-sided prism of quartz, we frequently find them acting in combination, the resultants producing secondary forms, as, e.g., when the resultant of three forces at right angles to the faces of a cube acting together produce faces which cut off the corners of the cube. The crystal in the latter instance would be made up of a combination of two crystal forms, the cube and the octahedron. In the same way a series of faces may be produced which bevel the edges between the cube and the octahedron, constituting a form of 24 planes. From this it will be readily seen that extremely complicated crystals are possible. The multiplication of crystal forms is, however, subject to the *law of rational indices*, which admits of the usual occurrence of such forms as will intercept the crystallographic axes in proportion to a series of low numbers and simple fractions. It is this law, tracing as it does a direct relation between the simplicity of the axial intercepts of a crystal form and the frequency of its occurrence in nature, which goes far towards proving the theory of regular molecular structure in crystals.

A very significant fact in relation to the connection between the molecular structure of crystals and their chemical molecules is that in many instances substances related chemically crystallize in similar forms of the same crystallographic system. This is known as *isomorphism*. (See MINERALOGY, *Mineral Chemistry*.) Among certain chemical compounds a reversal of the order of molecular grouping often takes place, resulting in the production of *twin crystals*, which are formed by the uniting of two or individual crystals in reversed

juxtaposition. The interrelation of twin crystals is always referable to some simple crystallographic axis or plane.

Divisions of Crystallography. The science of crystallography is divided into (1) morphological crystallography, which deals with the external forms of crystals and includes the mathematical relations of crystals; (2) crystallogeny, or chemical crystallography, which treats of the genesis or growth of crystals, and (3) physical crystallography, which discusses the physical properties of crystals, a very important branch of which in its relation to petrography is optical crystallography. Consult Dana, *Treat Book of Mineralogy*, parts 1-3 (New York, 1902), Williams, *Elements of Crystallography* (ib., 1891), Groth, *Physikalische Kristallographie* (Leipzig, 1895), Moses, *Characters of Crystals* (New York, 1899); Phillips, *Mineralogy*, part 1 (ib., 1912). See MINERALOGY.

CRYSTALLOIDS (Gk *κρυσταλλοειδής*, *krystalloeidēs*, like crystal, from *κρυσταλλος*, *krystallōs*, crystal + *ειδός*, *eidos*, form). Crystals of reserve proteids in plants. They occur in small proteid granules (see ALBUMEN), in the endosperm (the food bearing tissue surrounding the embryo), and in the embryo of various seeds. Similar crystals are found free in the outer cells of potato tubers and in certain seaweeds. Crystalloids are angular in form, but their faces and angles are inconstant. They are insoluble in water, but absorb it and swell, as ordinary mineral crystals do not. They are insoluble in weak solutions, but dissolve in strong solutions of common salt. The proteid material composing crystalloids belongs to the group of globulins. See also COLLOIDS.

CRYSTALLOMANCY (from Gk, *κρυσταλλος*, *krystallōs*, crystal + *μαντεία*, *mantēia*, divination). At one time a popular practice of divination, accomplished by means of transparent bodies. Commonly a transparent jewel would be employed, but a beryl was deemed most effective. The operator first muttered over it certain formulas of prayer and then gave it into the hands of a youth or virgin—none others were pure enough to discern its revelations—who read in it the information required. The desired facts were conveyed by means of written characters on the crystal, but sometimes the spirits invoked were supposed to appear in the crystal to answer the questions asked. This method of divination is still practiced by magicians. Consult Shorthouse, *John Innesant* (London, 1881), Thomas, *Crystal Gazing: Its History and Practice* (New York, 1905).

CRYSTAL PALACE (so called because made of glass). An edifice erected in Hyde Park, London, for the World's Fair held in 1851. Designed by Sir Joseph Paxton, it was built of glass and iron, with floors of wood. Its length was 1608 feet, and its area 21 acres. It cost £1,450,000. Every department of art and science was represented, and the visitors numbered over 6,000,000. Its materials were removed in 1854, and the structure rebuilt at Sydenham, 8 miles from London. There the park and grounds cover nearly 200 acres, and a permanent fair is held. In 1853 a similar but smaller "crystal palace" was erected between Fortieth and Forty-second streets on Sixth Avenue, New York. It was used for exhibitions and grand concerts, but was destroyed by fire in 1858. The locality is now Bryant Park.

CSABA, chō'bō, or **BÉKÉS-CSABA**, bā'-kash-chō'bō, a town of Hungary, in the County of Békés, 5 miles from the White Kőrös, with which it is connected by canal, and 105 miles east-southeast of Budapest (Map: Hungary, G 3). Its industries are principally agricultural—cattle raising, wine production, wheat and hemp growing. The women are noted for their skill in making linen and hemp fabrics. Csaba has the largest Protestant community of any town in Hungary, excepting Budapest. It is an important railway centre. Pop. 1890, 32,244, largely Slovaks; 1900, 37,547; 1910, 42,599. The Lutheran religion predominates.

CSÁNYI, chā'nyē, LÁSZLÓ (LADISLAUS) (1790-1849). An Hungarian statesman. He was born at Csány (County of Zala), and served in the campaigns of 1809-15. He early manifested an interest in local politics and became intimate with Francis Deák. In 1848 he was appointed commissioner plenipotentiary to various divisions of the revolutionary army, and subsequently received from Kossuth a portfolio in the ministry. After the surrender of the Hungarian army at Világos he refused to avail himself of the opportunity for flight; but as he had previously been one of the most active organizers of the revolution, so he now became a martyr to his convictions, and after a voluntary surrender to the Russians at Sarkad he was delivered by them to the Austrians, and executed on Oct. 10, 1849.

CSÁRDÁS, chār'dáš (Hung, from *csárda*, tavern). The national dance of Hungary. It consists of two movements, the first a slow *lassú* in *lud* form and in four-fourth or two-fourth time. It is mostly in the minor mode. The second movement, *friss* or *frischka*, is an exceedingly lively dance, also in four-fourth or two-fourth time. This is in the major mode and consists of 8 and 16 bar phrases, which are repeated. Towards the end the time is greatly accelerated, and the rhythm becomes more and more complex, so that the whole piece has a wild, tumultuous, and abrupt character. In both parts of the *csárdás* the accent comes on the weak beat. The alternation from the *lassú* to the *friss* is made at the will of the dancer, who motions to the players when the change is to be made. The figures of the *csárdás* vary greatly in different districts. The usual form opens with a stately promenade, which changes into a rapid whirling motion. The dancers then separate and carry on a sort of pantomime, the girl alternately approaching and retreating from her partner, who follows and finally seizes her. Again they whirl wildly around, then separate and go through much the same performance. The dance may be performed by any number of couples, but, as no two couples are ever dancing identically the same figures at the same time, the whole presents a varied and complex appearance. See MAGYAR MUSIC.

CSENGERY, chēn'gē-rī, ANTON (1822-80). An Hungarian statesman and publicist. He was born at Grosswardein and early devoted himself to journalism. After editing the *Pesti Hírlap* for three years he was in 1848 appointed ministerial councillor and followed the Hungarian ministry to Debreczin. In 1849 he returned to Budapest and devoted himself to literary pursuits. In 1857 he founded the review entitled *Budapesti Szemle*, which he conducted for 12 years. He was an active promoter of agricultural

and trade societies and was one of the chief founders and afterward the director of the Hungarian Institute of Land Credits. In 1861 he was elected to the Diet, where he became, as the most intimate friend of Deák, a powerful leader of the Deák party. In addition to his excellent translation of Macaulay's *History of England* (latest ed., 1874), he was the author of several important and brilliantly written works in Hungarian, among which may be mentioned: *Historical Studies and Character Sketches* (2 vols., 1870); *History and Historians* (1874); *Memorial Address on Francis Deák* (1877). His collected works were published in Budapest in 1884.

CSIKY, ché'k'é, GERGELY, or GREGOR (1842-91). An Hungarian dramatist, born at Pankota (Arad). After studying Catholic theology at Budapest and Vienna he became professor at the Priests' Seminary in Temesvár. After an activity here of several years he became a convert to Protestantism in 1878. Csiky is considered one of the greatest of modern Hungarian dramatists; he was equally effective in tragedy and comedy. He also wrote several successful novels, among them *Attila család* ('The Atlas Family,' 1890), and translated into Hungarian the works of Sophocles, Euripides, and Plautus, as well as standard works of French and English dramatists. Among his numerous plays, most of which have been highly successful, may be mentioned the comedies *Joslat* ('The Oracle'), *Mulányi*, and *Karai*; the tragedies *Janus*, *Spartacus*, *Nora*, and *Thiodora*; and the popular drama *The Proletarians* (*A Proletariok*).

CSOKONAI, ché'kó-nó-é, VITÉZ MINÁLY (1773-1805). An Hungarian poet, born at Debreczin. He was appointed professor of poetry in the college at Debreczin in 1794 but resigned the post in 1795, in order to study law, and, with the exception of a brief connection with the gymnasium of Csurgó, he lived thenceforth in private, devoting himself wholly to literature. His acquirements, particularly in linguistics, were notable. In poetry he was to some extent influenced by Földi, but remained essentially independent. He was preeminently a lyricist, in both the narrower domain of the folk song and the larger realm of artistic poetry. His diction is simple and often naive. Some pronounced defects of taste have met with the censure of the critics, but a distinguished place among modern Hungarian poets has been conceded to him. He wrote a most original mock-heroic poem called *Dorottua, or the Triumph of the Ladies at the Carnival* (1804), several comedies, and a number of odes which enjoyed considerable popularity principally because they opposed Napoleon and the French Revolution. A collective edition of his works was published by Toldy in 1846. Two specimen poems rendered into German may be found in Schwicker, *Geschichte der ungarischen Literatur* (Leipzig, 1889). The city of Debreczin erected a statue of him in 1871. For his biography, consult the works of Szana (Pest, 1869) and Haraszti (ib., 1880).

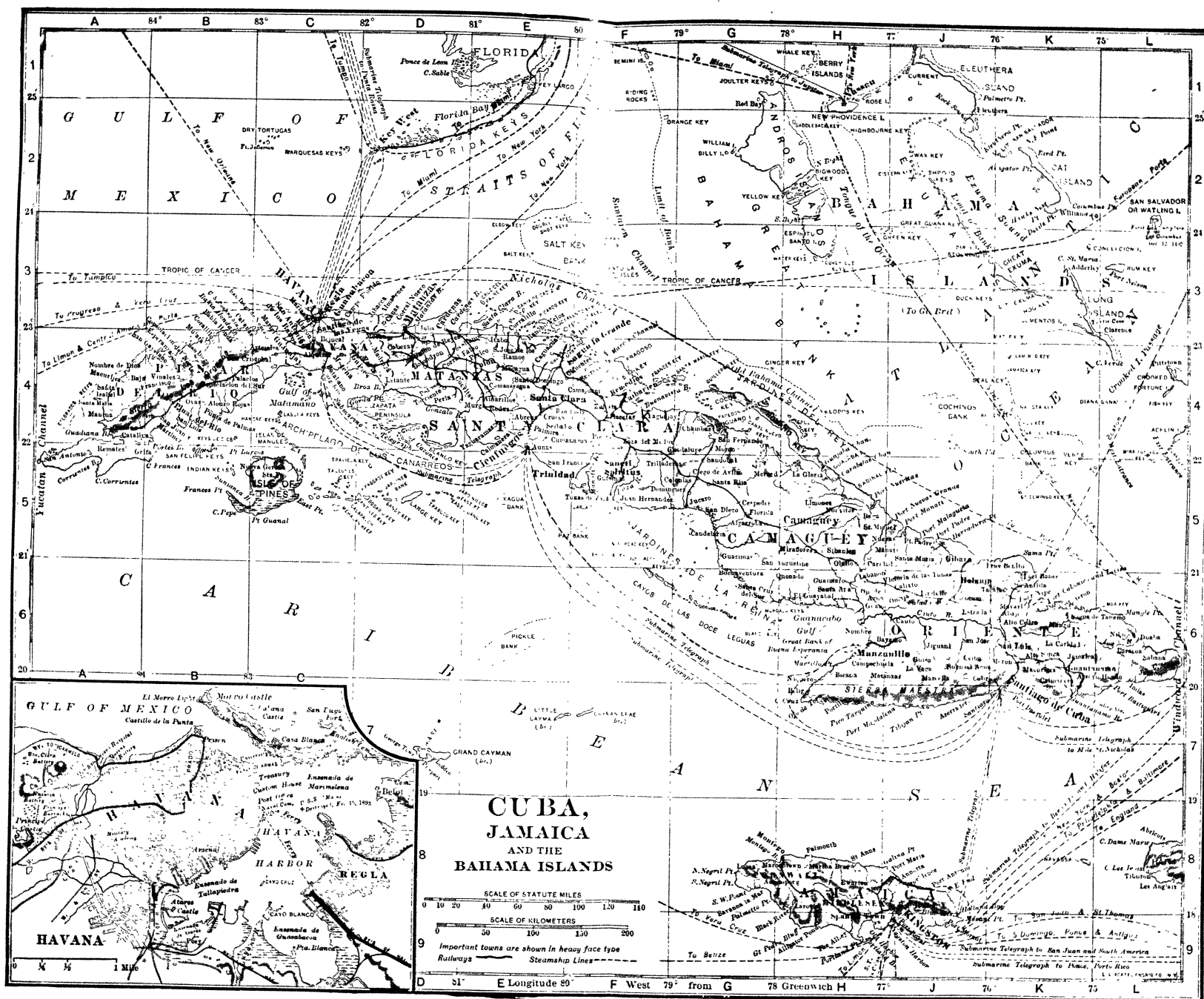
CSOMA DE KÖRÖS, ché'mó de ké'rësh, SÁNDOR (1784-1842). An Hungarian traveler and Tibetan scholar. He was born, April 4, 1784, at Körös, in Transylvania, and was educated first at the college of Nagy-Enyed, and subsequently at Göttingen, where he devoted himself especially to the study of Oriental languages. It was the dream of his life to discover the original home

of his race, the Magyars, in Asia. In 1820 he set out on his pilgrimage for that purpose. He went to Egypt, then to Teheran, and, disguised as an Armenian, to Little Bokhara, and finally settled for four years (1827-30) at the Buddhist monastery of Kanam on the confines of Tibet and India, where he studied Tibetan. He found to his disappointment that the Tibetan language had little bearing on the Magyar problem, but it led him to Calcutta to study Sanskrit, as the literature of Tibet is largely translated from the Sanskrit. At Calcutta, where he became the object of general attention on the part of British scholars, he devoted himself to cataloguing the Tibetan books, upward of 1000 volumes, in the library of the Asiatic Society of Bengal. He prepared, likewise, a *Tibetan Grammar* (1834) and a *Dictionary* (1834) which is still a standard work, and he wrote a number of articles on Tibetan literature in the *Asiatic Researches*. Once more he set out on his old-time search to find the early home of the Magyars and bent his way towards the western confines of China, but while on this journey he died at Dauling, north-eastern India, April 11, 1842. Consult Th. Duka, *Life and Works of A. C. de Körös* (London, 1885).

CSONGRÁD, chôn'grád. A market town of Hungary, in the county of the same name, situated near the confluence of the Theiss and the Körös, 70 miles southeast of Budapest (Map: Hungary, G 3). The inhabitants are chiefly engaged in the raising of cattle, agriculture, the making of wine, and fishing. Pop., 1900, 22,619. 1910, 28,310, mostly Magyars.

CTENACODON, ténák'ó-dén. One of the rare primitive fossil mammals found in the Upper Jurassic rocks of Wyoming. It is known only by the lower jaws and a portion of the upper. The former has a length of about one-half inch and indicates an animal of the size of a mouse. The teeth are of the multituberculate type and consist of a prominent chisel-shaped incisor, four longitudinally compressed premolars, which are distinctly cutting teeth with serrated edges and grooved sides, and of which the fourth is much the largest, and two small molars with tubercles surrounding the central cavities on their crowns. This type of dentition indicates relationship to the Monotremata (*Ornithorhynchus* and *Echidna*), which, together with the fossil *Ctenacodon* and its allies, *Plagaulax* and *Polynastodon* from the Eocene, and other Mesozoic and Tertiary genera, form the order Multituberculata of the subclass Prototheria. Consult Cope, "The Tertiary Marsupialia," in *American Naturalist* (Philadelphia, 1884); Marsh, "American Jurassic Mammals," in *American Journal of Science*, vol. xxviii, 31st series (New Haven, 1887); Osborn, "On the Structure and Classification of the Mesozoic Mammalia," in *Journal of the Academy of Natural Science*, Philadelphia, 2d series, vol. ix (1888); id., "Supplementary Note on the Above," in *Proceedings of the Academy of Natural Science* (ib., 1888).

CTENOID (tén'oid) **FISHES** (Gk. *krevoeîds*, *ktenoeîds*, comblike, from *kreis*, *kteis*, comb + *eîdos*, *eîdos*, form). One of the four orders into which Agassiz classified fishes, the others being *cycloid*, *placoid*, and *ganoid*. The name refers to the scales, which bear teeth or sharp projections on the posterior or free margin. These teeth may be in one or more rows.



farther eastward, a group of many islets, known as the Jardines de la Reina.

The western province of Pinar del Río is hilly, and is traversed by a mountain range, Sierra de los Organos, 2500 feet high. The celebrated tobacco region, Vuelta Abajo, is on its south slope. The central provinces of Havana, Matanzas, Santa Clara, and Camaguey have an undulating surface, broken only here and there by hills, such as the group near Trinidad, on the south coast. The most elevated portion of the island is in the eastern Province of Santiago de Cuba, which consists in the main of an elevated plateau, 1000 to 2000 feet high, deeply scored by streams. Along the south coast of this province, stretching from Cape Cruz eastward, is the Sierra Maestra, the highest land of the island, its highest peak, Turquino, being 8320 feet in height. The south coast, except in the Province of Santiago, is low and marshy. In the provinces of Santa Clara and Matanzas is the great Zapata swamp, having an area of 600 square miles. Just west of the city of Matanzas is the beautiful Yumuri valley, the most attractive scenic feature of the island. The rivers are numerous, but short, and in general unfitted for navigation: the river Cauto, in the southeastern part, is about 150 miles in length, and is navigable for a distance of 50 miles to Cauto Embarradero.

Climate. The climate of Cuba on the coast is extremely equable, but less so inland. The average temperatures for January vary from 72° F. at the north, to 75° F. at the south, and the July temperatures average about 82° F.; the coast temperatures seldom exceed 90° F. in summer, nor go below 65° F. in winter. In the mountain regions, however, the temperature often falls below 50° F. The rainfall is excessive in the northeastern section, reaching over 100 inches in some places, at Havana it is over 50 inches; the southern coast region has, however, much less rainfall. The chief rainy season is in summer, but rain falls throughout the year. The prevailing winds are the trades, from the northeast. Cuba lies within the path of the West Indian hurricanes, which are liable to occur during August, September, and October. The unhealthful conditions formerly prevalent were due to the absence of sanitary precautions. Yellow fever was an annual epidemic. The recommendation of sanitary measures by a commission of American scientists, in 1901, and the energetic administration of these measures, first by the United States military authorities and subsequently by the Cuban national government, have resulted in the practically complete extirpation of this disease. See HAVANA: YELLOW FEVER.

Flora. The vegetation of Cuba is tropical in its species and luxuriance, although, strangely enough, trees usually found only in colder climates are also found even in the Cuban lowlands. Thus, the pine grows side by side with the mahogany tree. Palms are plentiful, including the magnificent and useful royal palm. The majagua, granadillo, Cuban ebony, *lignum vitae*, Cuban cedar, Cuban mahogany, the *acana*, jiquí, cottonwood, logwood, rosewood, and the odd jagüey are all indigenous. The plants of greatest economic value are sugar cane and tobacco; coffee, cacao, and henequén are also cultivated. Among the economic fruit and vegetable products may be mentioned the banana, coconut, pineapple, orange, lemon, lime, fig, date, tamarind,

mango, guava, zapote, pomegranate, custard apple, alligator pear, melon, bean, cassava, and sweet potato.

Fauna. The fauna of Cuba includes rabbits, the hutia (q.v.), and bats; the domestic hog, dog, and cat (which have run wild and become very numerous); over 200 species of birds, including scavenger buzzards and vultures, grouse, quail, snipe, and wild turkeys; alligators, chameleons, iguanas, small lizards, and tree toads. Few species of snakes are found, although some, like the *majá*, grow to large size (16 to 18 feet). The land crabs, which move over the country in countless numbers and grow in size up to 8 inches in diameter, are very annoying, as are also the flying cockroaches. Scorpions, centipedes, and tarantulas are plentiful. Insects are numerous in species and limitless in numbers; among these are ants, beautiful fireflies, and what has been described as the "worst pest on the island," the nigua, or jigger. Nearly 650 species of fish have been found in Cuban waters, among which are large sharks, the giant aguja (weighing sometimes 500 pounds), the snoring ronco, gallego, garfish, and the parago, or red snapper. The porpoise and manatee are also found in numbers in the coast waters. Over 1600 species of mollusks are found in Cuba.

Geology. Cuba was largely formed in late Tertiary times. The rocks composing it are mainly recent stratified deposits. There are irregular areas of granite, serpentine, and eruptive rocks near the middle of the island, surrounded by Tertiary beds extending over most of the island to the coast. The Sierra de los Organos is composed mainly of Triassic sandstones, and the Sierra Maestra of Cretaceous and Tertiary beds. The mineral resources consist of iron, asphalt, manganese, coal, and copper.

Mineral Resources. The mineral deposits of Cuba are confined chiefly to Oriente, and are exploited almost exclusively by American companies. The chief mineral, iron, was first worked on a large scale in 1884, and the output has since then grown at a steady rate, increasing from 23,977 tons in 1884 to over 600,000 tons annually at present, almost all of it going to the United States. The ore is of good quality and especially adapted for the manufacture of Bessemer steel. Another mineral product of importance is manganese, which is also found in Oriente and exported to the United States. Copper was mined in Cuba as early as the sixteenth century in the Sierra del Cobre, near Santiago de Cuba, Oriente; and prior to the discovery of copper in the United States the latter imported most of the copper for its domestic use from Cuba. Owing to unfavorable circumstances copper mining ceased in 1869, not to be resumed until after the Spanish-American War. In general, the mining industries of the island are little developed.

Agriculture. Owing to its climate and soil, Cuba is exceptionally well adapted for agriculture, but long years of political oppression and unfavorable labor conditions, combined somewhat with the indisposition for work inherent in the natives, retarded the agricultural development of the island. Prior to the last war with Spain the number of farms was estimated at over 90,000, valued at nearly \$200,000,000. But the war, with the Spanish reconcentrado policy, caused a great destruction of farms and live stock. In 1905 it was estimated that about 16 per cent was under cultivation. Ownership on

the part of colored inhabitants is confined largely to the smaller farms.

Sugar.—Sugar was one of the earliest products of the island. Cane is supposed to have been introduced in 1523, but its cultivation for three centuries was insignificant. The annual output prior to the opening of the nineteenth century averaged about 28,000 tons, which was increased to 70,000 in 1817 and by the end of the first half of the century to about 300,000. During the latter half of the nineteenth century also the tendency was upward, although the industry was greatly handicapped by frequent internal disturbances and by the low price of sugar, brought about largely by the competition of beet sugar. In 1853 the output of the island was 322,000 tons, the average from 1850 to 1878 was about 470,000 tons, and in 1870 the output was 726,000. In 1881 the amount had fallen to 493,000 tons; but in 1894 there were produced 1,054,214 tons, or nearly 50 per cent of the world's output of cane sugar. Even in 1895, the first year of the Cuban war, the output exceeded 1,000,000 tons; but in the following year it fell to 225,221, with a further decrease in 1897 of 13,221 tons. Since the Spanish-American war the figures have rapidly grown, 335,668 tons in 1899, 1,132,482 tons in 1906, 1,459,630 tons in 1911, 1,896,000 tons in 1912, and in 1913 (i.e., the season of 1912-13), 2,285,000 tons. The cultivation of sugar requires a large outlay of capital. The successful *colono*, or sugar estate, generally contains several thousands of acres, several miles of private railway for transporting the cane to the mills, numerous buildings and costly plants of machinery for the manufacture of the sugar, besides buildings for the housing of 1000 or more employees. The cane, which requires replanting but once in seven years, is chiefly grown on elevated land, no fertilizer being required. About one-half the cultivated land is given over to sugar. In 1912 the sugar export was valued at \$102,033,516, most of which (valued at \$94,204,287) went to the United States.

Tobacco.—Next to sugar, tobacco is the most important agricultural product of the island. The cultivation of that plant in Cuba dates from about 1580, when it was introduced into the Vuelta Abajo, which has since been famous for the quality of its tobacco. The Vuelta Abajo is generally regarded as that part of Cuba west of the meridian of Havana, and thus includes Pinar del Rio Province and part of La Habana Province, sometimes the term is applied to a restricted area within Pinar del Rio. The output of Pinar del Rio is over 70 per cent of the entire crop of the island. La Habana yields less than 25 per cent, Santa Clara producing the bulk of the remainder. At the outbreak of the war for independence the normal annual output was over 62,000,000 pounds, but in 1896-97 the amount had dwindled to about 41,000,000 pounds; in 1904-05 it reached about 45,700,000 pounds, and in 1911 it was 37,019,640 pounds. In 1912, 23,684,944 pounds of leaf tobacco were exported, of which 16,769,318 pounds went to the United States. Tobacco covers about one-tenth of the cultivated area.

Other Agricultural Products.—Corn, or maize, is grown throughout the island and is used extensively for the feeding of domestic animals. Rice is also cultivated, but the harvest goes entirely to satisfy the domestic demand. Wheat, barley, and oats are little cultivated, and it is

doubtful whether the output of wheat will ever meet the home demand. Sweet potatoes are raised almost everywhere and form a very important article of food. The natural conditions are exceedingly favorable for the cultivation of fruit. The banana is grown in enormous quantities and, besides being extensively exported to the United States, figures very prominently in the diet of the poorer classes. Coffee, once an important product, is now in a state of decline, and the output is barely sufficient for home consumption. Pineapples, oranges, coconuts, limes, lemons, and numerous other southern fruits grow in abundance. Their cultivation and exportation have increased notably in recent years. The fruit interests are largely in the hands of foreign (chiefly American) companies.

The forests of Cuba are supposed to occupy about 50 per cent of the total area of the island. Besides the valuable mahogany and cedar woods which find their way to foreign markets, there are about 30 species of the palm, of which the royal palm is probably the most useful tree on the island, every part of it, from the leaves and fibre to the roots, being utilized by the natives. Of the forest area the state owns 1,250,000 acres.

The natural conditions for the raising of live stock are very favorable, and at one time this industry was in a high state of development. During the decades preceding the war for independence, however, the supply was far short of the natural demand, and most of the animals necessary for agricultural purposes and slaughtering had to be imported. In 1894 the live stock of the island numbered 584,725 horses, 2,485,766 cattle, 570,194 hogs, and 78,494 sheep, with a total value of over \$101,000,000. The effect of the late war on the live stock of the island may be seen from the census figures of 1899, which give the number of horses at 88,000, cattle, 376,650, hogs, 358,868; and sheep, 9982. In January, 1902, there were 805,000 cattle, 137,000 horses, and 25,700 mules. In June, 1912, there were 2,829,553 cattle, 560,580 horses, 41,192 mules, and 2298 asses.

Manufactures. The manufacturing industries of Cuba are almost wholly confined to the production of sugar and of cigars and cigarettes—both industries closely connected with agriculture. In fact, the first is so intimately connected with the plantations that it is rather to be regarded as an adjunct of agriculture than a separate industry. In the case of tobacco products the line of demarcation is more distinct, and, while some of the large manufacturing companies have their own plantations, most of them prefer to buy the raw material of the planters. The centre of the cigar manufacturing is Havana, and most of the large firms are in the hands of foreigners.

Labor Conditions. One of the prominent retarding factors in the agricultural and industrial development of Cuba is the scarcity of labor. The liberation of slaves had a detrimental effect on the economic development of Cuba as well as the West Indies in general. With the supply of black labor cut off, the Chinese coolies became the chief factor in the Cuban labor market, but, owing to real or alleged inhuman treatment, the Chinese government prohibited further emigration to the island. Since then Spain and the Canary Islands have been drawn upon to some extent, but the supply falls short of the demand. The war still further depleted the ranks of labor, and accord-

ing to the census of 1899 only 299,197 persons were engaged in agriculture, fishing, and mining; 93,034 in manufacturing and mechanical pursuits. The 1907 census showed that of all wage earners 48.5 per cent were engaged in agriculture, mining, and fishing, 16.3 in manufacturing, and 17.7 in trade and transportation. To the sugar planter the problem of securing competent laborers is serious. In the tobacco industry the labor question does not offer such difficulties, owing to the fact that the work requires great skill, and white labor can be utilized to a large extent. In the mining industry the problem is also simplified, largely because of more favorable climatic conditions in the mountain districts.

Transportation. Existing transportation facilities are inadequate. The roads are mostly unimproved and during the rainy season become almost impassable. Much of even the *Camino Central*, the chief highway of the island running from Havana to Santiago de Cuba, is in poor condition. However, the impetus given to public improvements during the American occupation has been continued to some extent by the Cuban government, which is steadily improving the highways of the country. In the introduction of the railroad Cuba was 12 years in advance of Spain; the first railway in a Spanish country was the line from Havana to Güines, opened in 1837. A system was built up between the city of Pinar del Río in the west and the city of Santa Clara in the middle of the island, and short lines were constructed from several ports into the interior. In 1902 Santa Clara was connected with Santiago de Cuba, through communication being thus established nearly from one end of the island to the other. For the most part the railways are narrow gauge, with light rails and poor roadbeds. Havana is the centre of the railway system. Among the ports connected with the line running from Havana to Santiago de Cuba are Cienfuegos, Cárdenas, Caibarién, Nuevitas (connecting with Camaguey), and Manzanillo. All the railways are owned and operated by private companies. In 1913 the length of railway in operation, including the private lines owned by the great sugar estates, was upward of 2200 miles. At the end of 1910 there were 5848 miles of telegraph line, with 6184 miles of wire and 180 offices, post offices, 496.

Commerce. The commerce of Cuba, under the Spanish régime, notwithstanding the restrictions placed upon it, was, relatively speaking, extensive. By a system of heavy protection, which had grown out of the monopoly idea of the seventeenth century, most of the commerce was diverted into Spanish channels, although only a few of the demands of the island could be supplied by Spanish domestic products. But the adoption of a reciprocal treaty between the United States and Spain gave an impetus to commercial relations between the former country and Cuba. The exports of merchandise from the United States to Cuba rose from \$12,224,888 in 1891 to \$24,157,698 in 1893, while the imports of Cuban products into the United States increased during the same period from \$61,714,395 to \$78,706,506. With the expiration of this treaty in 1894 and the beginning of the war for independence in the following year, Cuban commerce began to decline, and the exports and imports in 1899 amounted to \$49,700,000 and \$75,300,000 respectively, as against \$64,000,000 and \$93,000,000 in 1892. Comparing the mean

annual value of imports by countries for 1894-95 (\$67,335,800) with that for the period of 1899-1900 (\$84,985,800), we find that Spain's share fell off from about 44 to less than 16 per cent; that of the United States increased from about 33 to over 45 per cent, while that of the United Kingdom practically remained the same, over 15 per cent. The export trade of Cuba for 1900 was distributed as follows: United States and possessions, 68 per cent; United Kingdom and possessions, 12 per cent; Spain, 2 per cent; and Germany, 11 per cent. In 1903 the imports amounted to \$67,000,000, and the exports to \$78,000,000. The principal imports in that year were: foods and drinks, 36 per cent; textiles, 16 per cent; animals and animal products, 13 per cent; metals, machinery, and chemicals, 15 per cent. The principal exports were: sugar and its products, 54 per cent, tobacco and its products, 20 per cent; the remainder consisting of woods, fruits, minerals, and animals. Imports increased from about \$77,000,000 in 1904 to \$91,447,581 in the fiscal year 1909, and exports from about \$89,000,000 to \$124,711,000. In the fiscal year 1910 imports and exports were \$103,675,581 and \$150,909,020 respectively. In 1911, \$108,097,782 and \$129,178,865, in 1912, \$120,229,317 and \$146,787,295. Principal exports in the fiscal years 1911 and 1912: sugar, \$85,168,933 and \$102,033,516 (of which \$85,081,624 and \$94,264,287 to the United States); unmanufactured tobacco, \$16,888,761 and \$17,399,403 (of which \$14,319,155 and \$14,954,309 to the United States); manufactures of tobacco, \$13,097,982 and \$13,057,484, iron, gold, and copper ores, \$3,874,172 and \$3,910,305, fruits, \$1,835,952 and \$2,264,229. The growth of Cuba's trade with the United States after the reciprocity treaty of December, 1903, may be seen in the following figures: imports from and exports to the United States in 1903, \$26,000,000 and \$60,000,000; in 1904, \$33,000,000 and \$74,000,000, in 1905, \$44,000,000 and \$95,000,000, in 1909, \$46,339,000 and \$109,408,000, in 1910, \$54,569 and \$129,329,000, in 1911, \$57,128,000 and \$113,451,000, in 1912, \$62,826,000 and \$122,969,000. Second to the United States in commercial importance is the United Kingdom, imports from which in 1911 and 1912 amounted to \$12,759,000 and \$14,834,000; exports, \$5,087,000 and \$11,067,000.

Banks. Of all the banks founded in Cuba in the course of the last three decades of the past century, only two survived the Spanish-American War, viz., the Spanish Bank of the Island of Cuba and the Bank of Commerce. The former, though owned by private stockholders, was a semi-official institution under the Spanish régime, being subject to certain official regulations, and its governor appointed by the Spanish government. It acted as fiscal agent of the government, collecting the internal revenue and floating the paper currency. The Bank of Commerce owes its uninterrupted, though by no means entirely prosperous, existence to its valuable railway and other properties, which have helped indirectly to swell its banking business and have yielded a revenue outside of that derived from its purely banking operations.

Finance. The history of the currency of Cuba does not differ much from the lamentable record made by nearly all of the Spanish-American countries as well as Spain. It is the story of desperate, but in the end of vain, attempts to make the fiat of government pass for commodi-

ties of intrinsic worth in the monetary transactions of the people. For a time such attempts succeeded, but in the end the government was compelled to refuse its own worthless currency. This is particularly true of the paper currency of the Spanish government, which was worth at the time of American occupation but seven cents on the dollar. Even before that event, when the Spanish government accepted 10 per cent of customs dues in that currency, the price rose only to 15 cents, varying between that value and 12 cents. The last issue of Spanish paper currency took place during the war for independence, when \$20,000,000 of paper money was put in circulation through the Spanish Bank of the Island of Cuba upon the security of \$6,330,000 (silver) deposited with the bank. In spite of having been made legal tender, the paper went at a discount from the start, and as soon as the government had shown by its illegal withdrawal of the silver fund from the bank that it did not mean to depart from its old-time methods, the paper was repudiated throughout the island, until, as stated above, the action of the government in accepting the paper in payment of 10 per cent of customs dues raised it to from 12 to 15 per cent of its par value.

The standard of money in Spanish Cuba was Spanish gold, a 25-peseta piece being the principal coin. In addition to that there was a large amount of silver currency. The principal silver coins in circulation were: the peso (dollar), medio peso (half dollar), peseta (quarter dollar), real (bit), medio real (half dime). Since silver was not exchangeable for gold at its face value it tended, as is always the case, to drive the gold out of circulation. To counteract that tendency the government by a royal decree artificially inflated the value of the gold 25-peseta piece to \$5.30, the real value being only about \$4.80. In 1893 the French louis, a 20-franc piece (real value \$3.86), was similarly and for the same reason inflated to \$4.24.

Upon assuming temporary administration of the island, the government of the United States found itself in a predicament. The only rational course lay in reducing the coin to its face value and putting an end to all inflation and artificial substitutes for currency of intrinsic worth. On the other hand, the people had become accustomed to existing conditions: prices had adjusted themselves to the level of the inflated currency, and all contracts had been concluded on that basis. Nevertheless, by order of the President of the United States, which took effect Jan. 1, 1899, the United States gold dollar was declared the standard in which all customs, taxes, public and postal dues in Cuba should be paid, and foreign gold coins should be current at their real value. At the same time, since retail prices and wages have been usually fixed on the island on the basis of silver money, and in order to prevent a sudden rise of wages to the detriment of the planters who could not expect a corresponding rise in prices of their products in the foreign markets, the Spanish silver money was also declared legal tender. The old inconveniences of a fluctuating currency were done away with by giving the coins a fixed rate in exchange for gold as follows: peso, 60 cents; medio peso, 30; peseta, 12; real, 6; medio real, 3 cents. A fixed value was also given to the bronze and copper coins, which were made legal tender for sums not exceeding one dollar.

During the last 30 years of Spanish sovereignty in Cuba the budget of the island remained almost stationary, at from 26,000,000 to 30,000,000 pesos. Although the entire revenue was derived from the people of the island, only about 15 per cent of the expenditures was incurred for local needs, while about 85 per cent went to defray "sovereignty expenses," i.e., the expenses of the general government. The average annual budget for the period July, 1890, to June, 1895, was as follows:

REVENUE

Customs	\$11,599,270
Internal revenue	5,882,205
Lotteries	2,919,945
Other sources	2,058,305
Total	\$22,459,725

EXPENDITURE

Government	\$3,634,439
Justice and instruction	902,449
Finance	664,911
Public works	890,685
Total civil administration	\$6,092,484
Army and navy	\$6,493,281
Service of the debt	10,334,421
Total	\$22,910,186
Deficit ..	450,461

As compared with the foregoing average budget of the Spanish régime, the following budget for the fiscal year 1900-01 (during the American occupation) is of interest:

REVENUE

Customs	\$15,945,666.42
Postal	367,950.28
Internal	658,535.92
Miscellaneous	182,736.96
Total	\$17,154,889.58

EXPENDITURE

State and government	\$1,756,689.53
Justice	871,152.52
Public instruction	794,335.78
Finance	2,363,863.61
Agriculture, industry, and commerce	223,588.56
Public works	1,735,231.38
Municipalities	8,226,748.39
Military department	1,732,885.04
Total	\$17,644,494.81

The chief sources of revenue under Spanish rule were (1) taxes and excise duties, yielding less than one-fourth of the total; (2) import and export duties, which furnished about 55 per cent of the entire revenue; (3) stamp taxes, 6 per cent of the revenue; (4) lotteries, over 7 per cent; (5) state property—rent and sale of public lands and rent from docks—producing about 1½ per cent of the total revenue; (6) miscellaneous, over 5 per cent. Thus the great bulk of taxation fell upon the consumer, while the expenditures took little account of the needs of the people. As the above table shows, the army absorbed almost 30 per cent of the entire expenditure; nearly 50 per cent went to pay the debt incurred by the Spanish government, while only about one-fourth of the total went for civil administration, of which the greater part was absorbed by salaries of Spanish officers.

It will be observed that under the new régime the customs duties furnished over 90 per cent of the entire revenue of the island. On the other hand, on the side of expenditures a radical change may be noted. The expenses of the mili-

tary department decreased from nearly one-half of the total expenditure to less than 10 per cent. The service of the debt naturally disappeared from the budget because it was not the business of the United States to pay the debts incurred by the Spanish government, and the Cuban Convention, by repudiating that debt, relieved the people of a great burden. A detailed comparison of expenditures under the two régimes is impossible owing to the different method of classification; however, a comparison of the four leading items common to both budgets shows the following changes:

The expense for state and government decreased from \$3,634,439 to \$1,756,689.53, or 52 per cent, although the latter sum includes the cost of the census. The expense for justice and instruction, on the other hand, increased from \$902,449 to \$1,605,488.30, or 78 per cent. The finance department showed also an increased expenditure of 255 per cent, and that of public works increased from \$880,685 to \$1,735,231.38, or 99 per cent. An unusually large item, \$8,226,748, almost one-half of the total budget, was formed by the supplementary grants to municipalities. These subsidies were occasioned by the poverty-stricken condition of the people, who were unable to raise the necessary local revenue, and the money was advanced largely to defray expenditures affecting the most vital interests of the people, such as instruction, sanitation, hospitals and asylums, public buildings, etc.

Such were the finances of Cuba during the period of American military occupation. The national budget for 1905-06 showed estimated revenue of \$19,899,805 (of which \$17,862,000, customs) and estimated expenditure of \$19,138,104. for 1912-13 estimated revenue and expenditure were \$37,940,000 and \$33,974,147 respectively. Estimated receipts for the latter year were as follows: customs, \$26,434,000, excise, \$3,900,000; lottery, \$3,700,000; direct taxes, \$1,113,000, posts and telegraphs, \$1,076,000, consular dues, \$500,000; other, \$1,217,000; total, \$37,940,000. Estimated disbursements for 1912-13: administration, \$10,117,394, public instruction, \$4,782,653, sanitary service, \$3,784,987, public debt, \$3,710,500; public works, \$3,704,625; finance, \$3,329,504; justice, \$2,038,220, executive, \$1,000,540, foreign affairs, \$717,224; agriculture, industry, and commerce, \$488,400; total, \$33,974,147. The public debt in 1911 was \$62,083,100; charge, \$2,464,585.

Government. The constitution of Cuba was adopted by the constitutional convention on Feb. 21, 1901. It provides for a republican form of government and in its main provisions differs but slightly from the Constitution of the United States. The President, who must be either a native Cuban or a naturalized citizen with at least 10 years' service in the Cuban army during the wars for independence, is chosen by an electoral college for a term of four years and is disqualified for more than two consecutive terms. He has the right of appointing and removing the members of his cabinet.

The legislative power is vested in the Congress, which consists of a Senate and a House of Representatives. The former is composed of four senators from each province, chosen by an electoral board composed of the provincial councilmen and electors, the latter being twice the number of the former and chosen by popular vote. Provision is made for the retirement of

one-half of the senators every four years. The House of Representatives consists of one member for every 25,000 inhabitants, or for a fraction of more than 12,500. They are elected directly for four years, one-half retiring every two years. Congress meets twice annually (on the first Monday in April and November) and is endowed with extensive powers, controlling, besides the financial affairs and foreign relations of the republic, also the preparation of electoral laws for the provinces and municipalities. The approval of two-thirds of the members of both legislative bodies is necessary for a change in the constitution.

For administrative purposes the republic is divided into six provinces. The provincial governors and assemblies are elected directly for a period of four years. The provinces are independent in their internal administration, but the President has the right of interference in case of abuses of power on the part of the Governor or the Assembly. The municipalities are administered by mayors and assemblies elected directly by popular vote. The judges of the Supreme Court are appointed by the President with the approval of the Senate. The voting franchise is accorded to every male Cuban over 21 years of age, and not mentally incapacitated, convicted of crime, nor serving in the army or navy, to all Spanish male residents of like age who have been on the island since April 11, 1899, and to all male foreigners of like age who have resided in Cuba since Jan. 1, 1899. For foreigners who have arrived on the island after Jan. 1, 1899, a five years' residence is required for naturalization.

Education. Primary education, according to the provisions of the constitution, is free and compulsory, and the expenses are to be paid by the central government in case of inability on the part of a province or a municipality to maintain its primary schools. Secondary and advanced education is under the control of the state. During the Spanish régime education was controlled to a large extent by the church, and the provisions for primary education were very inadequate. According to the census of 1899 the proportion of illiteracy among the voting population was: Cubans, 59 per cent; Spaniards, 12 per cent. In 1894, just before the war for independence, there were about 900 public and about 700 private schools, with an enrollment of not more than 60,000. With the American occupation the school system was entirely reorganized, and the facilities for teaching as well as the enrollment increased with an extraordinary rapidity, so that in 1900 the number of public schools was 3550, with an enrollment of 172,000 and an average attendance of 123,000. In February, 1911, there were 3774 public schools, with an enrollment of 152,658 and an average attendance of 105,774; enrollment in private schools, 24,434. The 1907 census showed that 56.6 per cent of the people above 10 years could read (as compared with 43.3 per cent in 1899). Cuba has a university at Havana. The population is Roman Catholic. The island forms one archiepiscopal diocese.

Population. The population of Cuba in 1910 is stated at 2,220,278; the estimate of 1912 is 2,473,600. There have been various censuses, beginning with 1774, but the results of those prior to 1887 are regarded as untrustworthy. The census returns have been as follows: 1774, 173,620; 1792, 272,300; 1817, 572,363; 1827,

704,487; 1841, 1,007,624; 1861, 1,396,530; 1877, 1,509,291; 1887, 1,631,687; 1899, 1,572,797; 1907 (census of September 30), 2,048,980. The decrease of 3.6 per cent shown in 1899 was due to the war. The increase shown in 1907 was 30.3 per cent; the increase was largest in Pinar del Río (41.1 per cent), next largest in Oriente (38.8), and smallest in Matanzas (13.5). The 1907 population was returned by race and sex as follows:

	Male	Female	Total
Native whites	608,597	615,942	1,224,539
Foreign whites	163,014	40,623	203,637
Negroes	133,655	140,617	274,272
Mixed	157,975	176,720	334,695
Yellow	11,641	196	11,837
Total	1,074,882	974,098	2,048,980

The percentage of whites was 69.75, negroes 13.28, mixed 16.40, and yellow 0.57. Among the white population males exceeded females by 115,046; while among the negroes females exceeded males by 6962, and among the mixed inhabitants by 18,745. Of the total population, 1,820,239 were born in Cuba, 185,393 in Spain, 11,217 in China, 7948 in Africa, and 6713 in the United States. The percentage of negroes was largest in Oriente (43.1) and smallest in Camagüey (18.3). The inhabitants dependent upon agriculture, fisheries, or mining were 48.1 per cent of the total, domestic and personal service, 22.8 per cent, manufacturing and mechanical pursuits, 14.9 per cent; trade and transportation, 12.8 per cent; professional service, 1.4 per cent. The larger cities were: Havana (capital of the republic), 297,159; Cienfuegos de Cuba, 45,470; Matanzas, 36,009; Cienfuegos, 30,100; Camagüey, 29,616; Cardenas, 24,280. There were 13 other towns having over 8000 Sancti-Spiritus (17 thousand), Santa Clara (17), Manzanillo (16), Guantánamo (15), Guanabacoa (14), Sagua la Grande (12), Pinar del Río (11), Trinidad (11), San Antonio de los Baños (9), Jovellanos (9), Mariannao (9), Caibarién (8), Güines (8).

The area of the Republic of Cuba (i.e., the island of Cuba and the adjacent isles) is officially stated at 44,164 square miles (the provincial areas in the table below are approximations). By provinces the total population and the density per square mile were as follows in 1907:

PROVINCES	Square miles	Population 1907	Density
Pinar del Río	5,000	240,372	48.1
La Habana	2,772	538,010	194.1
Matanzas	3,700	239,812	64.8
Santa Clara	9,560	457,431	47.8
Camagüey	10,300	118,269	11.2
Oriente	12,468	455,086	36.5
Total	44,000	2,048,980	46.5

In 1904 immigrants numbered 28,467 (from Spain, 23,759); in 1905, 34,219 (47,902); in 1910, 32,006 (25,947); in 1911, 38,053 (32,104). In 1911 there were 12,846 marriages, 74,286 births, and 33,194 deaths.

History. The "Pearl (or Queen) of the Antilles," the "Ever-Faithful Isle," as the Spaniards

used to term Cuba (from the attitude of the Cubans at the time of the Napoleonic overthrow of the Spanish Bourbons), was discovered by Columbus during his first voyage, on Oct. 28, 1492. He landed, it is supposed, on the north coast, near Nuevitas, by the river Máximo, and believed it to be a part of the mainland, until assured by the natives that it was an island; but in 1494, on his second trip, he reiterated his previous belief and called the land Juana, after Juan, the son of Ferdinand and Isabella. Subsequently he changed the name to Ferdinandina in honor of Ferdinand, and still later to Santiago, the name of the patron saint of Spain, and finally to Ave Maria, in recognition of the kind offices of the Virgin Mary, but the aboriginal name of Cuba clung to the island and was never supplanted. A peaceable race of Indians, calling themselves Cibon-eyes, were its inhabitants, living under nine *caciques*. In 1502 Columbus visited Cuba a third time, and in 1511 his son, Diego Columbus, fitted out a colonizing expedition of 300 men, under Diego Velásquez, who in 1514 founded Santiago and Trinidad, and also a place on the southern coast called San Cristóbal de la Habana, a name soon transferred to another settlement on the northern coast, and in 1519 to the present locality. The natives were so cruelly treated that by 1553 their race was almost extinct, notwithstanding the appeals of Las Casas, the Roman Catholic apostle to the Indians, to the home government in their behalf. This humane missionary having observed in Santo Domingo that the negroes seemed to possess a capacity for endurance superior to that of the Indians, in order to save the latter, went so far as to suggest that negroes should be imported to take their places in the mines and cane fields. The colonists were not slow to act upon this suggestion, and thus negro slavery gained a foothold in the Western world. The Indians of Cuba, however, did not escape extermination, while the negroes were subjected to cruelties that checked their natural increase and made it necessary to recruit their numbers by constant importations. In 1537 Diego Columbus relinquished to the crown his right to appoint a governor for the island, and Hernando de Soto was appointed, under the title of captain general. Havana was destroyed by the French in 1538 and again in 1554, and for a century and a half the people of the island were in almost continual fear of invasion by the French, Dutch, or English, or the pirates infesting the adjacent waters. Many laws were also made in Spain that were exceedingly disastrous to the prosperity of the island—e.g., a law prohibiting all foreigners, even Spaniards not native Castilians, from trading with or settling in the island. This led to smuggling, which was carried on largely, especially after the English captured Jamaica in 1655. Whatever importance and prosperity Cuba has attained seems to date from the Treaty of Paris, 1763, which ended the Seven Years' War during which the English had captured Havana. The island was restored to Spain, and for the rest of the century it enjoyed unusual prosperity. Las Casas, appointed captain general in 1790, was especially indefatigable in his efforts for the public good, removing many restrictions from commerce and promoting many useful public works. During the nineteenth century the island was ruled by a succession of captains general possessing almost absolute power, and, although

some of these in the face of grave racial and social difficulties did excellent work, the majority proved both tyrannical and inefficient, as the great number of rebellions throughout the century indicate. Among them were: a number from 1820 to 1830, a sympathetic reflection of the revolutions in South America; the Black Eagle revolt of 1830, to some extent a servile insurrection; the great Ten Years' War, from 1867 to 1877, which was suppressed with revolting cruelty; and, finally, the insurrection in 1895, which was to end with the independence of Cuba. In the meantime the United States made repeated efforts to purchase the island. The first of these was by John Quincy Adams in 1825. In 1848 President Polk authorized the American Minister at Madrid to offer \$100,000,000, and in 1858 a proposal was made in the Senate to authorize an offer of \$30,000,000, but this was finally withdrawn. In 1854 what is known as the "Ostend Manifesto" (q.v.), drawn up in the interest of the slaveholding South by Buchanan, Mason, and Soule, United States ministers to Great Britain, France, and Spain respectively, claimed the right of this country to annex Cuba if Spain refused to sell. Various attempts were made to secure the independence of the island and the abolition of slavery. The insurrections of 1849-51, under Lopez (q.v.), and of 1854 failed to accomplish anything and were suppressed by the most cruel measures and, finally, under President Grant these efforts were renewed. The constant jeopardizing of American interests, killing of American citizens, and interference with American shipping, as is illustrated in the *Virginius* and *Black Warrior* affair, led to constant friction between the United States and Spain, and, though the rebellion of 1868-78 induced the Spanish government to promise the representation of Cuba in the Cortes by her own deputies, and a Liberal party was formed to secure the fulfillment of this pledge, to encourage white immigration, and to promote free trade, the general discontent remained. In 1895 came the final revolt. The insurgents, under Generals Gomez, Maceo, and Garcia, succeeded in keeping the field in spite of every effort to exterminate them, and became so bold as in February, 1896, to approach so near to Havana that the sound of their firing was heard within the capital. In the same month General Campos was recalled by the home government, and General Weyler, a soldier reputed to be savage in his measures, succeeded him. The revolutionists were able to maintain the semblance of a government, and their conduct, as well as that of Spain, aroused for them much sympathy throughout the United States. Before the close of 1897 General Weyler was recalled and superseded by General Blanco. In the United States the criticism of Spanish methods suddenly developed into widespread and outspoken hostility to Spain upon the mysterious destruction of the American warship *Maine* in the harbor of Havana on Feb. 15, 1898. Diplomatic relations became strained, and in April, 1898, owing to the apparent success of the insurrection and justified by that, President McKinley called the attention of Congress to the situation in such words that Congress, on April 19, declared that the people of Cuba were "of right ought to be free and independent." War followed, and by the Treaty of Dec. 10, 1898, Spain relinquished all right and sovereignty over Cuba,

and the United States took temporary possession of the island and assumed all the international obligations arising from such occupation. For three years thereafter the affairs of the island were administered exclusively by the War Department of the United States, and extensive public improvements were effected. In December, 1901, after the people had adopted a constitution, a president of the republic was elected, in the person of Estrada Palma. On May 20, 1902, the United States formally withdrew from the island, and Governor-General Wood was replaced by President Palma.

The conditions set for the withdrawal of the American occupation, as incorporated in the Cuban constitution and in the permanent treaty with the United States in 1903, were that the Cuban government should enter into no treaty with a foreign power tending to impair the independence of the republic or permitting a military or naval occupation of the island, and that no loans should be issued beyond the limit justified by the public revenue. The acts of the United States military government were recognized as valid, and the United States received the right to intervene for the discharge of its obligations under the Treaty of Paris. Provision was also made for the lease of coaling and naval stations to the United States. The question of the ownership of the Isle of Pines was reserved for future settlement. The first Congress of the Cuban republic met on May 5, 1902. In August a public loan of \$35,000,000 was authorized for the purpose of facilitating the revival of the sugar-cane industry. With the Spanish market closed to Cuban sugar and the United States as the leading available market, a modification of the American tariff laws in so far as they affected Cuban sugar became a matter of vital necessity. A reciprocity treaty between the two countries was ratified by the United States Senate in March, 1903, but the House of Representatives did not enact the necessary legislation until November. A tariff reduction of 20 per cent on Cuban products was granted. In September, 1903, the United States obtained the lease of the naval stations at Bahia Honda, near Havana, and Guantamano, not far from Santiago. In April, 1904, an extradition treaty was concluded with the United States. In the latter part of 1905 the American residents of the Isle of Pines set on foot a movement for the annexation of the island to the United States, but the agitation received its quietus from the American Secretary of State, who announced that the United States government recognized the sovereignty of Cuba over the Isle of Pines, a position affirmed in a formal treaty between the two governments, then under consideration by the United States Senate.

Party politics entered on an ominous course in 1905. At that time the two leading parties were the Liberals, formerly the National party, and the Moderates. The latter comprised the conservative elements, including the great commercial and industrial interests. The Liberal party, embracing probably a great majority of the nation, consisted of the more democratic elements, including the colored population which had supplied the bulk of the forces in the war against Spain. Up to the beginning of 1905 President Palma carried on his administration with Liberal support, but at that time he abruptly went over to the Moderate camp,

actuated probably by the widespread corruption and inefficiency that characterized the municipal governments under Liberal rule. The Liberal cabinet resigned and was replaced by one composed of Moderates, and there followed wholesale removals of Liberal municipal officers throughout the island. Both parties made active preparations for the presidential and congressional elections at the end of 1905, and there is no doubt that the Palma administration had extensive recourse to illegal methods. Thus the register of votes for the primary elections of September, 1905, contained 432,000 names, or "one-half larger than any possible number of voters." Intimidation was also practiced by the government. Convinced of the hopelessness of their cause, the Liberals remained away from the polls. President Palma was reflected, and a unanimously Moderate Lower House was chosen.

There were trivial uprisings in August and December, 1905, but it was not till the third week of August, 1906, that the Liberal outbreak came. The insurrectionary movement was begun by Pino Guerra in the Province of Pinar del Río, the first notable incident occurring on August 20, about 20 miles from Havana, when Gen. Quentin Bandera, a noted veteran of the War of Independence, was captured by a government force and brutally murdered. The government attempted to check the insurrection by arresting some of the Liberal leaders, including Gen. José Gómez, the candidate of the Liberals for the presidency in 1905. On August 27 President Palma issued a proclamation of amnesty in the hope of bringing the Liberals to terms, but it failed signally. How great was the general discontent throughout the island was attested by the helpless condition to which the government was reduced almost at a blow. It had at its command only 3000 rural guards, and it proceeded to organize a machine-gun battery which proved effective in one engagement with Pino Guerra's troops. But as early as September 8 President Palma secretly appealed to the United States government for intervention, professing his inability to cope with the insurrection. In the following week he gave public acknowledgment of the desperate state of affairs by suspending the constitution in the provinces of Havana, Pinar del Río, and Santa Clara. On September 12 the United States cruiser *Des Moines* arrived at Havana. At the request of President Palma a detachment of marines was landed the following day for the protection of the presidential palace, but received orders from Washington to reembark. On September 14 the Congress bestowed on President Palma full powers to deal with the situation, and on the 16th the latter, after a conference with a number of insurrectionary leaders, proclaimed a cessation of hostilities in view of the expected arrival of Mr. Taft, United States Secretary of War, who had been ordered to Cuba by President Roosevelt in the rôle of a mediator and with the hope of obviating the necessity of intervention by the United States. Secretary Taft landed in Havana on September 19, and immediately proceeded to inform himself of the merits of the issues at stake by soliciting testimony from the adherents of both parties. The weakness of the Moderate cause, in fact as well as in law, was speedily made apparent. Havana, as well as other large cities, was at the mercy of the insurgents.

It was decided by Secretary Taft that peace might be reestablished by declaring null the election of all candidates chosen in 1905 with the exception of President Palma, whose retention was necessary to maintain the continuity of constitutional government. But this possible solution was frustrated by the resignation, on September 28, of President Palma, who declared it incompatible with his dignity to remain in office under the specified conditions. A crisis was thus precipitated and intervention made inevitable. On September 29 Mr. Taft assumed the office of provisional Governor, and the dispatch of United States troops was hastened. The disarmament of the Cuban forces was at once begun and rapidly completed. For the next three years the United States occupied Cuba. In 1909, order having been restored, the republic was declared established for the second time, and the American troops left the island. For two years the new government under General Gómez prospered, but in 1911 the discontent of old veterans, who felt insufficiently rewarded for their services to the fatherland, led to trouble. American intervention was threatened, but the Cuban authorities quelled the incipient revolt, and order was restored. In 1912 the Conservative party under Menocal were victorious at the polls. The question of amnesty to those who opposed the government now became the foremost political issue, and it has not yet been settled. The new administration, however, has proven itself wide-awake to the necessity of economic and industrial progress in Cuba, and to further this has succeeded in floating a large loan in the United States in 1914. See SPAIN, UNITED STATES: SPANISH-AMERICAN WAR.

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CUBAN FEVER. See CALENTURE.

CUBAN LITERATURE. "In Cuba everybody versifies," said the eminent critic Menéndez y Pelayo. It is certainly true that in her compositions in verse Cuba has made her most important contribution to literature in the Spanish tongue. The earliest poem known to have been written on the island is the *Espejo de paciencia* (1608) of Silvestre de Balboa, a native of the Canaries, but neither the seventeenth nor the first half of the eighteenth century produced any Cuban poet of great merit. Mention may, however, be made of the names

of José Surf y Águila (1696-1762), who wrote some religious *loas*; Mariano José de Alva and Lorenzo Martínez de Avileira, authors of *glosas* and *coplas*; an unknown poetess of Havana, who indited a little poem on the English invasion of 1762; and the cleric Diego de Campos, who commemorated the same event in his *décimas*. To another cleric of the eighteenth century, Fray José Rodríguez (*Capacho*), who likewise wrote *décimas* on various subjects, has been attributed the earliest dramatic work composed in Cuba, *El príncipe jardinero y fingido Cloridano*, but the bibliophile Barrera ascribes the play to one Santiago de Pita. The University of Havana was established in 1721, and at an early date in the century the first printing press was set up. In 1790 the first newspaper, *El papel periódico*, made its appearance and had among its most active collaborators such men of force as the teacher of philosophy José Agustín Caballero, the physician Tomás Romay, and, above all, the poet Manuel de Zequeira. Quite a number of epigrams are due to the pen of Manuel del Socorro Rodríguez, a journalist who founded several papers elsewhere in Spanish America. The epic was attempted with little success by Count Colombini in his *Glorias de la Habana*. All thus far produced was rather verse than poetry; the first real poets of Cuba are Manuel de Zequeira (1760-1846) and Manuel Justo de Rubalcava (1769-1805). Zequeira, perhaps the most attractive Cuban poet anterior to Heredia, echoed in the colonies the note of patriotic fervor called forth in Spain by the stirring events of 1808: in the heroic strains of his *Batalla naval de Cortés*, of his *Dos de Mayo*, and his *Primer sitio de Zaragoza*, he is as much a Spaniard as Quintana and Gallego in their heroic odes (cf. his *Poesías*, New York, 1829). Rubalcava, who was "bucolic in temperament, translated the *Elogues* of Vergil and composed some original idyls and descriptive poems (cf. the *Poesías de M. J. Rubalcava*, Santiago de Cuba, 1848).

But towering above the countless poetasters of the time, the greatest of all the poets that Cuba has yet produced was José María de Heredia (1803-39). A patriotic poet, who was exiled from Cuba because of his opposition to Spanish government, Heredia is held in high esteem, not only for his political poems like the *Himno del desterrado*, but also for his descriptive poems like the *Niágara*, the *Teocalli de Cholula*, and the *Tempestad* (often called also the *Huracán*), pervaded by a melancholy sentiment and full of most noble imagery. Among Heredia's works are many translations and imitations of the poems of English, French, and Italian writers, such as Young, Campbell, the pseudo-Ossian, Lamartine, Delavigne, Millevoye, Arnault, Foscolo, and Pindemonte (cf. the edition of Heredia's poems and his translations and imitations of foreign dramas, published at New York, 1875: his prose *Lecciones de historia universal*, Toluca, 1831, and other prose works: and consult Vilemain, *Essai sur le génie de Pindare et sur la poésie lyrique*, Paris, 1859; J. Kennedy, *Modern Poets and Poetry of Spain*, London, 1852). Among the lesser lights must be counted Domingo del Monté, a Venezuelan, who, residing in Cuba, there composed pleasing romances, played the part of a generous patron of other poets, and strove energetically to have purity of idiom maintained in the Cuban use of the Castilian

speech; Ignacio Valdés Machuca, who imitated Meléndez Valdés in his *Ocios poéticos* (1819) and also translated and imitated Jean-Jacques Rousseau; Manuel González del Valle, a teacher of philosophy and the author of a *Diccionario de las Musas* (1827), etc. A protégé of Del Monté's was the romantic spirit José Jacinto Milanés (1814-63), a man of superior powers, whose lyrics are now gently sentimental and again madly socialistic. Milanés is also deemed one of the best playwrights that the island has had so far. His pieces include *El Conde Alarcos*, *El poeta en la corte*, *Por el pucato ó por el río*, and *A buena hambre no hay pan duro*. Pictures of manners in dialogue form are to be seen in his *Mirón cubano* (cf. the 1st ed. of his *Obras*, Havana, 1846; 2d ed., New York, 1865). Another true poet was Gabriel de la Concepción Valdés, best known by his pseudonym Plácido (1809-44). He was a mulatto and a foundling and had but slight training, yet few Cuban lyrics will live longer than his romance entitled *Nicotomal*, and his sonnets, *La muerte de Gessler*, *Fatalidad*, and *Plegaria* (cf. the editions of his verse, New York, 1856; and Havana, 1886). Of undisputed excellence is the work of the poetess Gertrudis Gómez de Avellaneda (1814-73). She was eminently successful as a lyric poet and as a dramatist, less so as a novelist (cf. an edition of her works, Madrid, 1869). Juan Valera says that as a lyric poet she has no rival of her sex in any literature, unless we go back to Sappho and Corinna, or perhaps to the Italian Renaissance and Vittoria Colonna; and in some respects he prefers the Cuban to the Italian.

Among the countless writers of verse that have arisen in Cuba later than Avellaneda, three are of particular merit: Joaquín Lorenzo Luaces (1826-67), the author of war songs (the *Caida de Missolonghi*, etc.), of odes (see especially the *Oración de Matías* of biblical inspiration and the ode *A Cyrus Field*, on the laying of the Atlantic cable), and of one or another drama (cf. the *Poesías de J. L. Luaces*, Havana, 1857, and the *Noches literarias en casa de N. Azórate*, Havana, 1866); Juan Clemente Zenea (1831-71), whose elegiac verse is full of a tender melancholy (cf. the complete edition of his *Poesías*, New York, 1872); and Rafael María de Mendive (1821-86), noted for his translation of the *Irish Melodies* of Thomas Moore, whose influence is also easily discernible in his original Cuban verse (cf. the *Poesías* of Mendive, Havana, 1883, and the *Melodías irlandesas*, New York, 1875). To the list of the nineteenth-century poets there may further be added the names of Ramón Vélaz y Herrera (born 1808), Miguel Teófilo de Tolón (1820-58), Francisco Orgáz (1815-73), Ramón de Palma y Romay (1812-60), Ramón Zambrana (1817-66), José Fornaris (1827-90), José Güell y Renté, etc.

As compared with her poets, it is clear that the prose writers of Cuba are distinctly inferior in importance. In the eighteenth century she has the historians Arrati and Urrutia; in the nineteenth, Valdés, José Arrango y Castillo, etc. Among her legal writers have figured Conde, Ayala, Armas, Bermúdez, Cintra, etc., and among her moralists and writers on philosophical matters, Barea, Veranes, José Agustín Caballero, Félix Varela, José de la Luz Caballero, etc. In the fine arts Vermau and Perouani have earned some recognition, and in

music Villate has gained notice by his operatic compositions. A really good critical account of Cuban prose and poetry has yet to be written; more light on the subject may be expected from the publication of the *Biblioteca selecta hispano-cubana de prosistas* and the *Antología de poesía cubana*, which a commission of litterateurs has presented to the Spanish Academy. On Cuban lyric poets an excellent essay has been written by M. Menéndez y Pelayo and now appears as the preface to the second volume of the *Antología de poetas hispano-americanos* (Madrid, 1893), which contains very good selections from the works of the most important Cuban poets. Consult also: the *Parnaso cubano*, *Colección de poesías selectas de autores cubanos desde Zequiera*, etc., by A. López Prieto (Havana, 1881); the *Cuba poética*, *colección escogida de las composiciones en verso de los poetas cubanos desde Zequiera*, prepared by Fornaris and Luaces (2d ed., ib., 1861). Hills, *Bardos cubanos, antología de las mejores poesías líricas de Heredia, "Plácido," Arvelaneda, Milanés, Mendive, Luaces, y Zenea*, with biographical notices of each of the poets and a comprehensive bibliography of their works and of Cuban poetry in general (Boston, 1901); Bachiller y Morales, *Apuntes para la historia de las letras y de la instrucción pública en la isla de Cuba* (Havana, 1859); Mitjans, *Estudio sobre el movimiento científico y literario de Cuba* (ib., 1890); Merchán, *Estudios críticos* (Bogotá, 1886); Calzadilla, *Diccionario biográfico cubano* (New York, 1878); González del Valle, *La poesía lírica en Cuba* (new ed., Barcelona, 1900); A. del Valle, *Parnaso cubano* (ib., 1912); C. M. Trilles, *Bibliografía cubana del siglo XIX* (2d vol. appeared at Matanzas, 1912, and carries the account from 1826 to 1840).

CUBE (Lat. *cubus*, Gr. *kybos*, *kybos*, cube), or **REGULAR HEXAHEDRON**. A regular solid with six square faces, each of which is parallel to the one opposite to it. It is a form of frequent occurrence in nature, especially among crystals. The cube, or third power, of a number is the product formed by taking the number three times as a factor, e.g., the cube of 4, or $4^3 = 4 \cdot 4 \cdot 4 = 64$. This use of the term arises from the circumstance that the solid contents of a cube may be expressed by the third power of the number which expresses the length of one of its edges. Thus, if the edge of a cube is 4 inches, its volume is $4 \cdot 4 \cdot 4 = 1$ cubic inch, or 64 cubic inches. The cube root of a number is one of the three equal factors of the number; e.g., the cube root of 8 is 2, since $2 \cdot 2 \cdot 2 = 8$. The number of which the root is sought is called the power, and if it is a power of a commensurable (q.v.) number, it is called a perfect power. Roots of perfect powers are often readily obtained by factoring, e.g., to find the cube root of 216, $216 = 6 \cdot 6 \cdot 6$, therefore 6 is the cube root of 216. If the root is incommensurable, the binomial formula, logarithms, or the equation (q.v.) is available. Every number which satisfies the equation $x^3 = 1$, or $x^3 - 1 = 0$, is a cube root of 1. But $x^3 - 1 = 0$ is the same as $(x - 1)(x^2 + x + 1) = 0$, and equating each factor to 0 and solving, $x = 1$, $-\frac{1}{2} + \frac{1}{2}\sqrt{-3}$, $-\frac{1}{2} - \frac{1}{2}\sqrt{-3}$, the three cube roots of unity. (See **COMPLEX NUMBER**.) The three cube roots of 8 are

$$2, 2(-\frac{1}{2} + \frac{1}{2}\sqrt{-3}), 2(-\frac{1}{2} - \frac{1}{2}\sqrt{-3}).$$

Thus any number has three cube roots—one real and two imaginary. In extensive calculations tables of roots and of logarithms are employed.

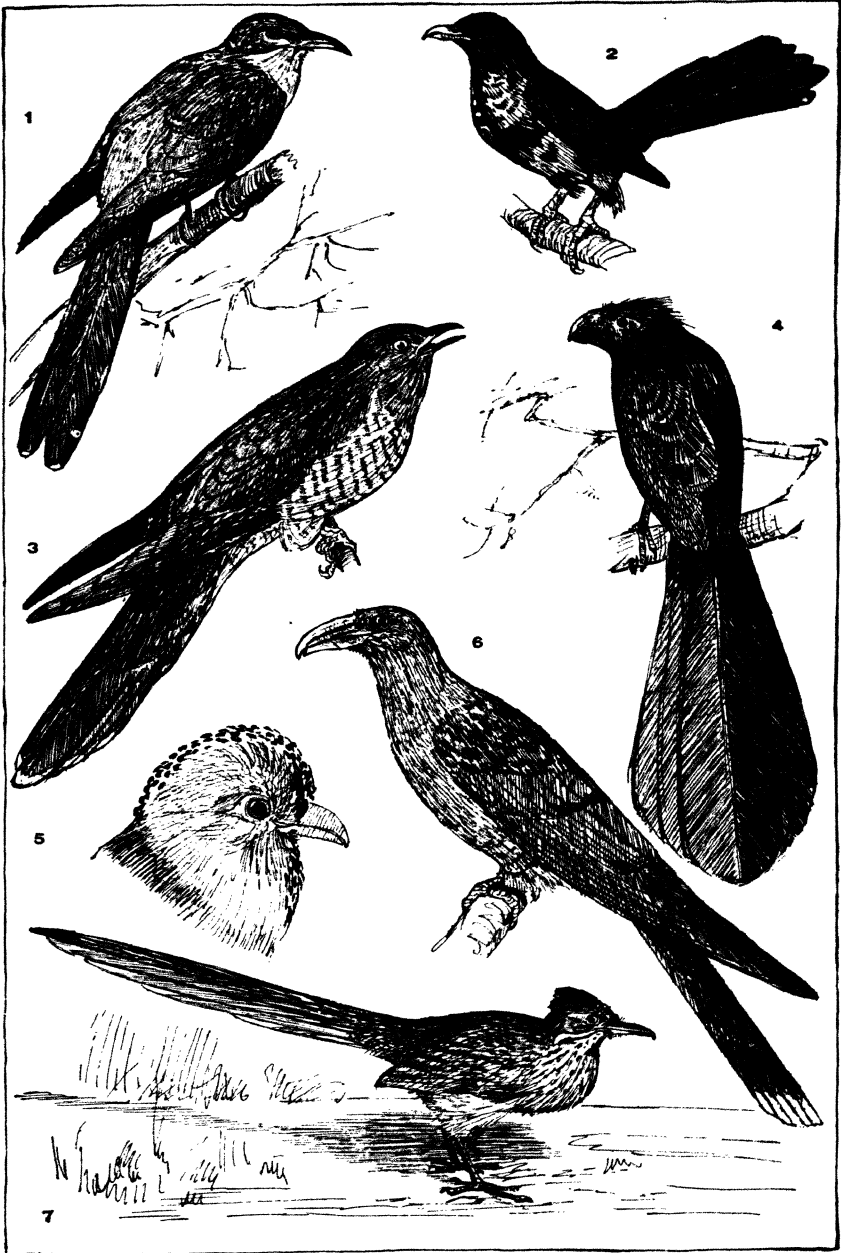
Duplication of the cube, or the Delian problem, according to tradition, originated with the oracle of Delos, who declared to the Athenians that a pestilence prevailing among them would cease if they doubled the altar of Apollo, i.e., replaced his cubical altar by another of twice its contents. The problem reduces to the solution of the continued proportion $a : x = x : y = y : 2a$, or to the solution of $x^3 = 2a^3$. This was effected geometrically by Hippocrates, Plato, Menæchmus, Archytas, and others, but not by elementary geometry. This is one of the three great problems whose appearance has been of wonderful significance in the development of mathematics. Consult Gow, *History of Greek Mathematics* (Cambridge, 1884), and Klein, *Vorlesung über ausgewählte Fragen der Elementargeometrie* (Leipzig, 1895; Eng. trans., Boston, 1897).

CU'BEES, or CUBE' PEP'PER (Fr. *cubebe*, from Ar. *kabāba*). The dried unripe berries of *Piper cubeba*, a species of climbing shrub of the family Piperaceæ, very closely allied to the true peppers. *Piper cubeba* is a native of Penang, Java, New Guinea, etc., and is said to be extensively cultivated in some parts of Java. Its spikes are solitary, opposite to the leaves, and usually produce about 50 berries, which are globular and, when dried, have much resemblance to black pepper, except in their lighter color and the stalk with which they are furnished. *Piper canum*, a native of the Sunda and Molucca islands, is supposed also to yield part of the cubebs of commerce, and the berries of *Piper ribesioides* possess similar properties. Cubebs are less pungent and more pleasantly aromatic than black pepper. They are used in the East as a condiment, but in Europe chiefly for medicinal purposes. They act as a stimulant and are sometimes found useful in cases of indigestion, also in chronic catarrh and in many affections of the mucous membrane, particularly those of the urinogenital system. The chief constituents of cubebs are a volatile oil, resin, cubebic acid, cubebin, and wax. Cubebs are administered in many ways. For illustration, see Plate of CYPRESS, ETC.

CUBE ROOT. See CUBE, INVOLUTION.

CUBIC EQUATION. A rational integral equation of the third degree is called a cubic equation. It is called binary, ternary, or quaternary according as it is homogeneous of the third degree in two, three, or four unknowns. The general form of a cubic equation of one unknown is $ax^3 + bx^2 + cx + d = 0$. It is shown in algebra that this equation can be reduced to one of the form $x^3 + px + q = 0$. Every cubic equation of this form has three roots, of which one is real and the others real or imaginary. The roots will all be real when p is negative, and $\frac{p^3}{27} > \frac{q^2}{4}$. This is known as the irreducible case in solving the equation. Only one root is real when p is positive, or when it is negative and $\frac{p^3}{27} < \frac{q^2}{4}$. If p is negative and $\frac{p^3}{27} = \frac{q^2}{4}$, two of the roots are equal. The cubic equation may be solved by the following formula, due to Tartaglia and Ferro. Italian mathematicians of

CUCKOOS



1. AMERICAN YELLOW-BILLED CUCKOO (*Coccyzus americanus*).
2. BLUEHEADED KOEL (*Eudynamis cyanocephala*).
3. COMMON EUROPEAN PARASITIC CUCKOO (*Cuculus canorus*).

4. ANI, or RAIN CROW (*Crotophaga ani*).
5. CRESTED CUCKOO (*Lepidogrammus cumingi*).
6. CHANNEL BILL (*Scythrops novæ-hollandiæ*).
7. CHAPARRAL COCK, or ROAD RUNNER (*Geococcyx californianus*).

the sixteenth century, but known as Cardan's formula:

$$x = \sqrt[3]{-\frac{q}{2} + \sqrt{\left(\frac{q^2}{4} + \frac{p^3}{27}\right)}} + \sqrt[3]{-\frac{q}{2} - \sqrt{\left(\frac{q^2}{4} + \frac{p^3}{27}\right)}}$$

Besides Ferro, Tartaglia, and Cardan, there were Vieta, Euler, and various others who contributed to the early theory of cubic equations. In case the roots of a cubic equation are all real their values are more readily calculated by means of trigonometric formulas: e.g., assume $x = n \cos a$, and the equation $x^3 + px$

$+ q = 0$ may be expressed by $\cos^3 a + \frac{q}{n^3} \cos a + \frac{p}{n^3} = 0$. But it is shown in trigonometry that $\cos^3 a - \frac{3}{4} \cos a - \frac{\cos 3a}{4} = 0$: therefore, equating

corresponding coefficients of $\cos a$, and solving the equations, $n = \sqrt{-\frac{4p}{3}}$ and $\cos 3a = -4q \left(-\frac{3}{4p}\right)^{\frac{1}{3}}$

Hence x may now be computed from $x = n \cdot \cos a$,

$n \cdot \cos \left(\frac{2\pi}{3} + a; n \cdot \cos \frac{2\pi}{3} - a\right)$ For history and

methods, consult Matthiesen, *Grundzüge der antiken und modernen Algebra der literalen Gleichungen* (Leipzig, 1896). See also CARDAN, JEROME

CUBICULUM (Lat., bedroom, from *cubare*, to lie down). A term used to designate a small room or cell in a Roman house, containing a bed or couch, and opening off the court, also a recess or alcove, a box at the theatre or circus, and lastly, a final resting place or burial recess for one or more bodies in the early Christian catacombs. In England, and less commonly in the United States, the term is applied to the bed alcoves of a common sleeping room or dormitory in a lodging house, school, or other institution, often in the Anglicized form *cubicle*.

CUBISTS. A group of post-Impressionist painters, who see and depict natural objects as if composed of innumerable cubes. They are best treated with painters of similar tendencies under POST-IMPRESSIONISM (qv).

CUBIT (Lat. *cubitus*, elbow). A measure employed by the ancients, equal to the length of the arm from the elbow to the tip of the middle finger. The cubit of the Romans was about 17½ inches and that of the Hebrews 22 inches, but its length is now generally given as 18 English inches.

CUBITT, SIR WILLIAM (1785-1861). An English civil engineer, born at Dilham, Norfolk. In 1800-04 he was apprenticed to a cabinet-maker at Stalham, and at Swanton was associated with a manufacturer of agricultural machines and devised self-regulating sails for windmills. In 1818 he began the manufacture of his invention known as the "treadmill," which was quickly introduced into the principal jails of Great Britain. From 1826 he was connected as engineer with important works in the improvement of canals and rivers and the construction of bridges and railways. He conducted the improvement of the Severn and the building of the Southeastern Railway. The water works of Berlin were also executed by him. In 1850-51 he was president of the Institution of Civil Engineers.

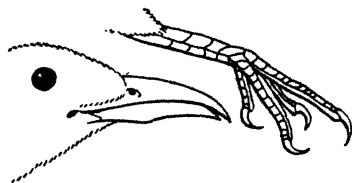
CUCKOO, куклѣ (Fr. *coucou*, Lat. *cululus*,

Gk. *κόκκυς*, *kokkys*, cuckoo, Skt. *kākila*, cuckoo). A name given to many birds of the picarian family Cuculidae, which contains about 175 species, mostly confined to the warmer regions of the globe, although some of them are summer visitors to cool climates. Only 35 of the known species live in the New World. The beak is slightly compressed and somewhat arched; the tail long, rounded, and usually of 10 feathers; the wings rather long; the tarsi short, with two toes directed forward and two backward, the outer hind toe capable of being brought half round to the front. The feet are thus adapted for grasping and moving about upon branches rather than for climbing.

Cuckoos of the Old World.—The name "cuckoo" is derived from the note of the male of the common European cuckoo (*Cuculus canorus*), which, although monotonous, is always heard with pleasure, being associated with all that is delightful in returning spring. A similar name is given to the bird in many languages. This common cuckoo is very widely diffused, as it is also found in India, Africa, and, in summer, even in Lapland and Kamchatka. It appears in Great Britain in April, and all except the young birds are believed to migrate southward again before the middle of August. The adult cuckoo is about a foot in length, ashy gray, barred beneath with black, the wings are black, and the tail is black, marked with white. It frequents both cultivated districts and moors. There is no pairing or continued attachment of the male and female; and the female, after having laid an egg on the ground, takes it in her mouth and deposits it, by means of her beak, in the nest of some other smaller bird, leaving the egg to be hatched and the young one to be fed by the proper owners of the nest. This egg is very small for so large a bird, not larger than a skylark's, and the number laid is uncertain. The young one, soon after hatching, acquires size and strength enough to eject from the nest any eggs or young birds—the true offspring of its foster parents—which may remain in it, and it seems restless and uneasy till this is accomplished. It works itself under them and then jerks them out by a motion of its rump. Other species of cuckoo, closely allied to the European cuckoo, inhabit Africa, Asia, and Australia, and have essentially the same habits, one, about the Mediterranean, victimizing pies alone, its eggs having a remarkable resemblance to those of the magpie. Equally parasitic are many Old-World tropical species of various other genera; yet some of them (see COLGAL) do not shirk parental responsibility, but incubate and rear their own offspring. This extraordinary practice of bird parasitism, in respect to its facts and probable origin and development, is thoroughly discussed by A. Newton, *Dictionary of Birds*, article "Cuckoo" (London, 1896), and Baker, *The Ibis* (ib., 1913).

The American cuckoos represent three different subfamilies—the anis, the road runners, and the tree cuckoos. The last compose the group Coccyzinae and are characteristic of and confined to America. The best-known species are the black-billed cuckoo (*Coccyzus erythrophthalmus*) and the yellow-billed (*Coccyzus americanus*). Both species occur commonly in summer throughout the United States and eastern Canada, but pass the winter in Central and South America. The black-billed cuckoo does

not occur west of the Rocky Mountains. The two species are of about the same size, a foot long, and are olive brown above, white beneath, but are easily distinguished by the color of the bill and the amount of white on the tail.



YELLOW-BILLED CUCKOO.

Unlike the Old-World cuckoos, they are not parasites, but build their own nests and incubate their own eggs. The nests are flimsy structures of twigs, the eggs large and pale blue. Incubation begins when the first egg is laid, so that no two of the eggs or young are in just the same stage of development. The American cuckoos are insectivorous and are very useful birds. Their note or call is a series of accelerated "chucks," not exactly harsh, but far from musical. In the Middle, Western, and Southern States the yellowbill is known as "rain crow," because its note is supposed to predict rain—an idea prevalent in regard to these birds in other parts of the world. Consult Beal, *Food of Cuckoos* (Department of Agriculture, Washington, 1898). See Plate of CUCKOOS, and Colored Plate of EGGS OF SONG BIRDS.

CUCKOO AND THE NIGHTINGALE, THE. A poem attributed in the sixteenth century to Chaucer, but probably not composed by him. The subject is the discussion between a nightingale and a cuckoo on the comparative blessings of love.

CUCKOO BEE. A naked, somewhat wasp-like bee of the family Nomadidae, all the many species of which are parasitic in the nests of other bees, after the manner of the European cuckoo. Each genus makes its home with some particular form or forms of wild bee; thus, our common *Nomada imbricata* is found in nests of *Andrena* and *Halictus*; *Stelis* lives on *Osmia*, etc. These inquilines have no means of collecting or carrying pollen and so have been forced to seek the hospitality of forms able to do so. The investigations of J. H. Emerton show that this forced association arouses no quarreling, but that there is frequently enough food for the larva of both the proper owner of the cell and of the guest, whose egg is laid in the same pollen mass. The term "cuckoo bee" is also applied to hymenopterous insects of the family Chrysididae. See BEE; CUCKOO FLY.

CUCKOO FLOWER. See CRESS.

CUCKOO FLY. One of a family (Chrysididae) of diminutive, beautiful, metallic-green wasps, in which the abdomen has only three, four, or five visible segments, and can be turned under the thorax and closely applied to it. This "fly" seeks out the nest of a solitary wasp or bee, and, when the rightful owner is absent collecting food, the cuckoo fly deposits an egg in each cell. These eggs are walled in by the bee, together with her own eggs. The cuckoo-fly larvæ hatch, eat the food stored up in the cell by the bee, and perchance even the rightful larvæ. The adult fly, when seen by the wasp,

is fought desperately, and during such encounters it rolls itself up in a defensive ball. In Europe, where the Germans call them *Goldwespen*, one of the cuckoo flies is parasitic on the currant worm.

CUCKOO SPIT. See FROG SPITTLE.

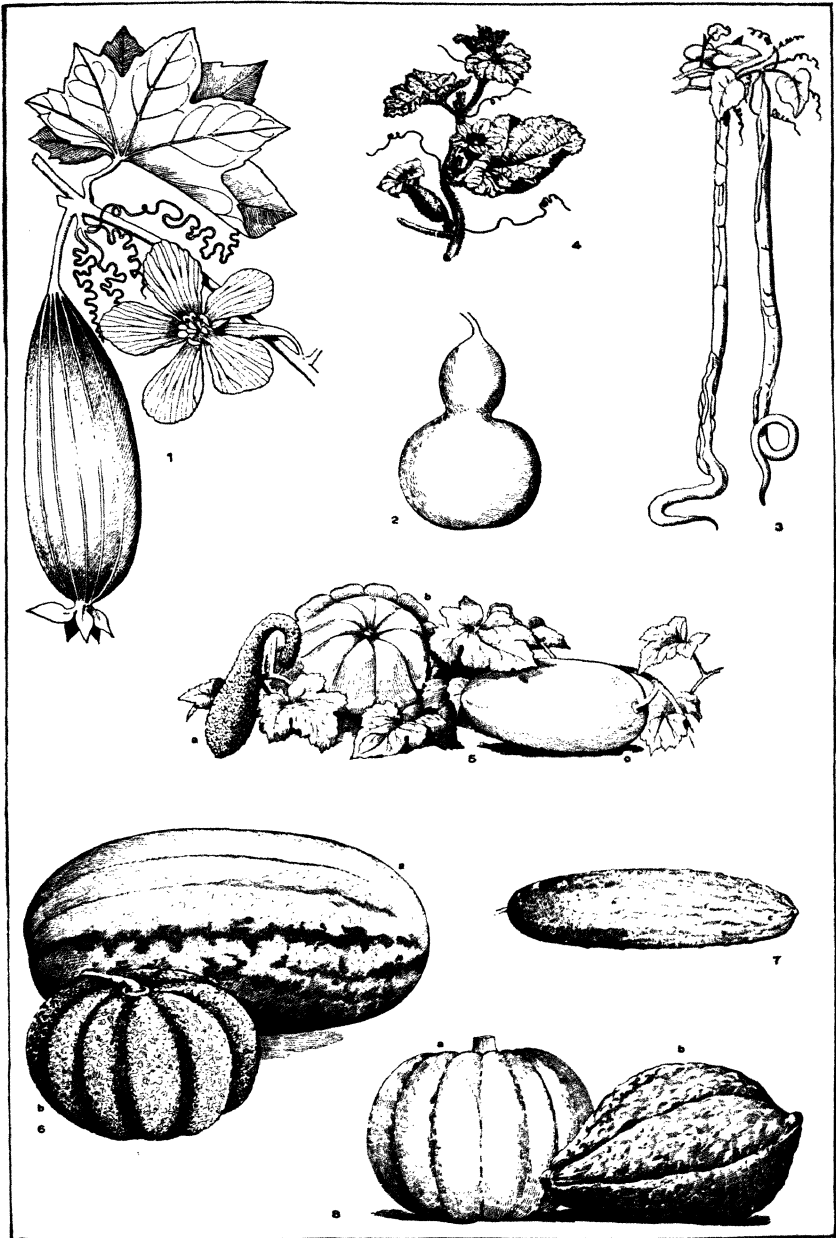
CUCUJIDÆ (Neo-Lat. nom. pl., from *Cucujus*, of South American origin). A large family, chiefly tropical, of oblong, flattened beetles, most of which live under bark. See CORN INSECTS.

CUCUMBER (OF. *cocombre*, Fr. *concombre*, from ML. *cucumer*, from Lat. *cucumis*, cucumber), *Cucumis sativus*. A common garden vegetable, native of Asia, and cultivated from the earliest times. The plant is vinelike and somewhat similar in appearance to the muskmelon. The oblong fruit (4 to 30 inches long) is eaten in the green state as a salad and is extensively used for pickling. The smaller sorts of pickling cucumbers are sometimes called "gherkins." The many varieties of cucumber in cultivation differ greatly in size and shape of the fruit. Cucumbers are very sensitive to frost. They are grown during the warm months in nearly all parts of the United States. The seeds are planted in hills 4 by 6 feet apart. The soil should be a fertile, warm loam, and the hills made rich with a few shovelfuls of well-rotted manure. The long English varieties extensively used for forcing in Europe are less used in America, the white-spine varieties being used more extensively for this purpose. To this genus belong other species valued for their edible fruit. *Cucumis anguria* is known as the West Indian gherkin. The snake cucumber (*Cucumis melo*, variety *flexuosus*) grows to a great length and is similar in quality to the common cucumber. *Cucumis serotinus* is cultivated in Turkey; *Cucumis macrocarpos* in Brazil; the conomon (*Cucumis conomon*) is much cultivated in Japan. The dudaim (*Cucumis dudaim*) is very generally cultivated in gardens in the East, for the fragrance of its fruit. The musk cucumber is *Cucumis moschata*.

CUCUMBER BEETLE. Of several beetles whose grubs attack cucumbers, the most important ones are described under MELON INSECTS (q.v.). A species of flea beetle found about cucumber vines is *Haltica cucumeris*, which is about the size of a small grain of wheat, black, with clay-colored antennæ and legs. The larvæ mine the seed leaves of the young plants, and both old and young feed upon the mature vine leaves and also upon other garden vegetables.

CUCUMBER DISEASES. The cucumber is subject to the attack of a number of fungi, only the more important of which can be mentioned. In the seed bed it is liable to the attack of *Phythium debaryanum*, the disease being called "damping off" (q.v.). In the field one of the worst pests is *Plasmopara cubensis*, producing mildew. It attacks the foliage, causing the leaves to turn yellow, to wilt, and die, the whole vine being involved. Spraying with some fungicide, as Bordeaux mixture or potassium sulphide, will prevent this disease if applied early and often. Care must be taken to spray the mixture upon the under sides of the leaves. In addition to cucumbers, this mildew occurs on muskmelons, squashes, and pumpkins. Another fungus, *Cladosporium cucumerinum*, attacks the fruit of the cucumber and melons, producing upon the young fruits small, sunken areas that later become black, rotten places. Often a sort of gummy exudation is associated

CUCUMBER ALLIES



1. LUFFA OR DISHRAG GOURD (*Luffa aegyptiaca*).
2. BOTTLE OR CALABASH GOURD (*Lagenaria vulgaris*).
3. SNAKE GOURD (*Trichosanthes Anguinata*).
4. FLOWERS OF MUSK-MELON (*Cucumis melo*).
5. SUMMER SQUASH (*Cucurbita*); *a*, Crookneck; *b*, Custard or Patty-pan; *c*, Vegetable Marrow.

6. *a*, WATERMELON (*Citrullus vulgaris*); *b*, MUSK-MELON (*Cucumis melo*).
7. CUCUMBER (*Cucumis sativus*).
8. *a*, PUMPKIN (*Cucurbita pepo*); *b*, WINTER OR HUBBARD SQUASH (*Cucurbita maxima*).

with this disease. The treatment given above is recommended for this disease. In the greenhouse a serious trouble to cucumber forcing is the powdery mildew (*Erysiphe cichoracearum*). It may be known by the white, flourlike splashes on the leaves. The leaves become yellow, then brown, and dry up, killing the plant. The disease spreads with great rapidity, but may be kept under control as in the above cases. A disease known as the "wilt disease" is often of great destruction to cucumbers, melons, etc. It is caused by a kind of bacteria to which the name *Bacillus tracheiphilus* has been given. The organisms fill the water ducts of the plant, causing it suddenly to collapse. The leaf blades shrivel and dry up, and later the petioles and stem become flaccid, and the whole plant perishes. If a stem be cut across, a sticky, milk-white substance exudes. The disease is readily produced by inoculation and is largely spread through the agency of insects. A somewhat similar disease is caused by a species of *Fusarium*, a fungus. A disease due to *Mycospharella citrullina* has recently become serious on cucumbers and other cucurbits grown under glass. It also attacks tomatoes.

CUCUMBER INSECTS. See MELON INSECTS.

CUCUMBER TREE. An American forest tree, *Magnolia acuminata*, growing in nearly all the States from New York to Arkansas and southward. The fruit, which looks like a cucumber, when macerated in spirit, makes a useful tonic drink. The timber is light and useful for boat building. See *MAGNOLIA*.

CU-CURBITACEÆ (Neo-Lat. nom. pl. from Lat. *cucurbita*, gourd). A family of dicotyledonous plants (the gourd family), consisting chiefly of herbaceous plants, natives of the warmer parts of the world, having succulent stems which climb by means of lateral tendrils. The epigynous flowers are monœcious or dioecious and sympetalous. The calyx and corolla are five-parted and more or less coherent. The stamens exhibit a number of peculiarities, in some cases having both unilocular and bilocular anthers; in other cases the often tortuous anthers adhere, and sometimes the filaments are united. The fruit, called a "pepo," is peculiar, is more or less succulent, has a fleshy rind, and the seed-bearing placenta either surround a central cavity or send prolongations into it. The seeds are flat and more or less imbedded in the pulp, which may be dry or juicy. The cotyledons are large and leaf like. This family contains 90 genera, with about 700 species, many of which produce edible fruits and are cultivated in temperate regions. To this family belong the cucumber, melon, gourd, pumpkin, squash, vegetable marrow, etc. (qq.v.). In some, important medicinal properties abound, as in bryony, colocynth, momordica, etc. (qq.v.). *Telfairia pedata*, a tropical African species, is cultivated for its seeds, which are used for food and from which oil is expressed.

CÚCUTA, koo'koo-tá. See SAN JOSÉ DE CÚCUTA.

CUDAHY, kud'a-hí. A city in Milwaukee Co., Wis., 5 miles south of Milwaukee, on the Chicago and Northwestern Railroad and on Lake Michigan (Map: Wisconsin, F 6). The manufactures of the city include rubber goods, machinery, vinegar, and gloves, and there are foundries and a meat-packing establishment. Pop., 1900, 1366; 1910, 3691.

CUDREAR, kud'bar'. See ARCHIL.
CUDDALORE, kud'da-lor', or **KUDALUR,** kud'a-loor'. The chief town in the southern division of South Arcot, Madras, British India, at the junction of the Pounaiyar and Gadelain rivers, 15 miles south of Pondicherry and 125 south of Madras by rail (Map: India, D 6). It has an ancient Siva temple and a ruined fort. The river, obstructed by a bar, admits only vessels of moderate size; but there is good anchorage 1½ miles off shore, and the port is the largest in South Arcot. The chief manufactures are cotton goods and carpets. There are a number of sugar refineries, oil presses, and paper mills, and an extensive export trade in cotton and grain. Cuddalore was the scene of exciting struggles between the French and the English from 1758 to 1795, when it was finally acquired by the latter. Pop., 1891, 47,400; 1901, 52,216; 1911, 56,574.

CUDDAPAH, kud'da-pá'. See KADAPA.
CUDILERO, koo'dé-lyá'ro. A maritime town in the Province of Oviedo, Spain, 20 miles northwest of the city of Oviedo (Map: Spain, B 1). The harbor, protected by a jetty, has a lighthouse which marks its eastern point. It admits, however, only small craft. The port is engaged largely in fishing, and there are fish-curing establishments and manufactures of linen and chocolate; stock raising and agriculture also are carried on, and in the vicinity are mines of manganese. Pop. (commune), 1900, 10,160; 1910, 10,703.

CUDRAKA, shoo'drá-ká. The reputed author of the Sanskrit drama *Mricchakatika* (q.v.). See SÚDRANA.

CUD'WORTH, RALPH (1617-88). An English theologian and philosopher. He was born at Aller, in Somersetshire, and admitted pensioner of Emmanuel College, Cambridge, in 1632, where he took his degree of M.A. and became a prominent tutor. In 1645 he was appointed master of Clare Hall and regius professor of Hebrew, in 1654 he was chosen master of Christ's College, in 1662 appointed to the rectory of Ashwell, and in 1678 installed prebendary of Gloucester. Cudworth's chief work, entitled *The True Intellectual System of the Universe* (1678), advocates a Platonizing doctrine of philosophy, especially emphasizing the necessity of a theological view against the contention of the mechanists of the day, and defending the doctrine of innate ideas. From such views the remarkable group of which he was a leader obtained the name of the Cambridge Platonists (q.v.). His *Treatise Concerning Eternal and Immutable Morality*, which was posthumously published in 1731, champions the innate character of our moral ideas, which are held to cognize the objective reality of good and evil with the same immediateness and certainty which attend our geometrical knowledge. Selections from this treatise appear in Selby-Bigge's *British Moralists* (1897). Consult: Martineau, *Types of Ethical Theory*, vol. ii (Oxford, 1898); Lowrey, *The Philosophy of Ralph Cudworth* (New York, 1885); Birch, *Life*, in the edition of Cudworth's works (1743; reprinted 1820), and the preface to Mosheim's Latin translation of Cudworth's works (1733); Seth, *English Philosophers and Schools of Philosophy* (1912).

CUENCA, kwán'ká. The capital of the Province of Azuay, Ecuador, situated on the Río Matadero, 8640 feet above sea level, 190 miles south-southwest of Quito (Map: Ecuador, B 41).

It has straight streets and contains, among the chief buildings, the cathedral, the high school (formerly a Jesuit college), the prison, and the government building. It is the centre of a fertile grain, cotton, sugar, and cochineal producing region, and rich metal deposits are worked in the neighborhood. The most important manufactures are pottery, hats, and woollens, and a considerable trade in preserved fruits, cheese, and grain is carried on. It is the third most important city in Ecuador and has a population of about 30,000. Cuenca was founded in 1557, on the site of the old native village Tumibamba, and in 1786 was created an episcopal see. There are numerous interesting Aztec remains in the vicinity. The mountain of Tarqui on the south was chosen in 1742 for determining the meridian line of La Condamine, Bouguer, and Godin. At the base of the mountain occurred the battle of Tarqui in 1828 between the Colombian and Peruvian forces.

CUENCA. A city of Spain, the capital of the province of the same name and the seat of a bishopric, about midway between Valencia and Madrid (Map: Spain, D 2). It is picturesquely situated, at an elevation of about 3000 feet, on the river Júcar, at the confluence of the Huécar, and is poorly built, with narrow, crooked streets. The walls are in ruins, and the city, once celebrated for industry and art, but faintly suggests its former prosperity. A fine bridge spans the Júcar, and there are a college and several notable churches, the most pretentious of which is the Gothic cathedral, with the chapel of the Albornoces. The city has some manufacturing interests and a trade in lumber and wine. Pop., 1900, 10,505; 1910, 11,721.

Cuenca first appears in the history of the ninth century, under Saracen power. In 1177, after a long siege, it fell into Christian hands, though earlier in the century it had been captured, but retaken. It was granted the dignity of a municipality in 1257. The city was taken by the English in 1706 after bombardment, and in 1808 and 1810 was sacked and burned by the French—disasters which contributed materially to its decline. In 1874 Cuenca fell into the power of the Carlists, who ravaged the city, infuriated by its stubborn resistance.

CUERNAVACA, kwár'ná-vá'ká. The capital of the State of Morelos, Mexico, magnificently situated in the valley of the Cuernavaca, 47 miles south of Mexico City, 5000 feet above sea level (Map Mexico, J 8). It contains a church built by Cortés, an agricultural academy, a fine government building, a theatre (with a capacity for 2000 spectators), a hospital, and a literary institute. The city is the centre of a fertile district and has extensive sugar refineries and distilleries. Near by are the ruins of an Aztec temple, 400 feet high, composed of five terraces. Cuernavaca, at the advent of the Spaniards, was an old Indian village and became, after its capture, the favorite residence of Cortés, his palace being still extant. In 1863 Maximilian made it his residence. It bears many marks of his royal favor, especially in its public gardens. As a health resort it is frequented by those who cannot stand the excessive altitude of Mexico City. Pop., 1895, 8747; 1900, 9584; 1910, 12,776.

CUEBO, kwá'ró. A town and the county seat of Dewitt Co., Tex., 105 miles by rail east-southeast of San Antonio, on the San Antonio

and Aransas Pass and the Southern Pacific railroads, and on the Guadalupe River (Map: Texas, D 5). It is in a rich agricultural belt, producing corn, rice, truck, and cotton, carries on a large trade in turkeys and cattle, and has cotton gins and compresses, a cotton mill, cottonseed-oil mills, machine shops, turkey-dressing plants, and a creamery. The water works and sewerage system are owned by the town. Pop., 1900, 3422; 1910, 3109.

CUERVO, kwár'vó. RUFINO JOSÉ (1844-1911). A Spanish-American humanist and philologist, born at Bogotá, Colombia, the son of Dr. Rufino Cuervo, a distinguished lawyer and statesman. Owing to various revolutionary disturbances Rufino José Cuervo was obliged to give up his professorship in Latin and help recoup the family fortunes. With his elder brother Angel he went into the brewing business about 1871. All during the darkest days the brothers held to their ideal of keeping the path as clear as possible for the studies of the younger one; and about 1882 they retired and went to Paris to spend the rest of their lives on the work Rufino José had planned. This work made of Cuervo the greatest Spanish grammarian and lexicographer of the nineteenth century, without dulling his delicate appreciation of literary values, so much so that Juan Valera, the most Attic stylist of them all, called him *el más profundo conocedor de la lengua castellana*. In addition to the work he (in collaboration with his brother) devoted to his father's career, *Vida de Rufino Cuervo y noticias de su época* (2 vols., Paris, 1892), he published five successively revised and enlarged editions of his *Apuntes críticos sobre el lenguaje bogotano* (5th ed., ib., 1907), repeated new editions, thoroughly revised and brought up to date, of the *Bello-Cuervo Gramática castellana*; and his *magnum opus*, the *Diccionario de construcción y régimen de la lengua castellana*. Although the work was completed, Cuervo's bad health after his brother's death prevented him from publishing more than the first two volumes: vol. i (Paris, 1885), letters A and B; vol. ii (ib., 1893), letters C, H, and D. The manuscript of the remainder was intrusted, by Cuervo's will, to the Colombian Academy for publication. Consult Fr. Pedro Fáb, *Rufino José Cuervo y la lengua castellana* (3 vols., Bogotá, 1912), and articles in the *Bulletin hispanique*, iii (1901) and xiii (1911) and the *Romanic Review*, iii (1912).

CUESTAS, kwá'stás, JUAN LINDOLFO (1837-1905). A South American politician and a president of Uruguay, born at Paisandú. In 1879 he became collector of customs, in 1880 Secretary of the Treasury, in 1884 Secretary of Justice, Worship, and Public Instruction, in 1886 Secretary of State, and in 1891 Senator for Paisandú. He was appointed President of the Senate in 1897, in 1898, after the assassination of President Borda, was placed in charge of the provisional government, and from 1899 to 1903 was President of the republic.

CUEVA, kwá'vá, JUAN DE LA (c.1550-c.1609). A Spanish poet and dramatist, born in Seville. Despite his importance as one of the most influential of Lope de Vega's predecessors, modern scholarship has not yet succeeded in learning much about his life. He is supposed to have been a pupil of Mal Lara and to have spent five years in New Spain (i.e., Mexico) with his brother Claudio, an officer of the Inquisi-

tion. The date of this voyage is uncertain, as is also that of his visit to the Canary Islands. During many years he acknowledges himself as being in love with Felipa de la Paz, whom he celebrates as Felicia. He is also credited with a love affair with Brígida Lucía de Belmonte, whom he is supposed to have met in the home of Argote de Molina; but there seems to be little ground for this second tale. He lived in his native city until 1607, when he went to Cuenca. We do not know exactly the dates of his birth and death. The last certain date we have is 1609, the date of his signature to a new copy of his *Exemplar poético*, which he had written in 1606. He left a quantity of works (plays, poems, letters, epigrams, romances, etc.), but he is of interest and importance only as a dramatist and dramaturge. In these respects it is difficult to exaggerate his importance and influence. He expounded his dramaturgic theories in 1606 in the third epistle of his *Exemplar poético*, after he had long been putting them into practice. His fame rests secure on several important innovations: the introduction of the historical drama, the successful use of the old romances, the refusal to be bound by the rule of the three unities, the sketching of the main lines of the *comedia de capa y espada*, and the embellishment of the drama by the use of metrical forms hitherto unknown to the drama (unless they had been used, as Walberg conjectures, in the lost plays of Cuesta's master, Mal Lara). He believed, too, that he was the first to reduce the number of acts to four (not knowing that Micael de Carvajal had preceded him), and the first to use a national theme (unaware that Bartolomé Palau had written, c.1524, his *Santa Oria*). But even in these respects Cueva was the first to make a deliberate effort to reform the drama. Only two of his plays have been reprinted: *El Saco de Roma*, which demonstrated the dramatic possibilities of modern history, and *El Infamador*, which is a foretaste of the peculiar form that is later to be taken by the Spanish drama of manners, and gives us in the character of the libertine Leucino a first sketch of the type that was to become immortal under the name of Don Juan. Consult E. de Ochoa, *Tesoro del teatro español*, vol. 1 (Paris, 1838), for the two plays, E. Walberg, *Juan de la Cueva et son "Exemplar poético"* (Lund, 1904). R. Menéndez Pidal, *L'Épopée castillane à travers la littérature espagnole* (Paris, 1910).

CUEVA, ENRÍQUEZ ARIAS DE SAAVEDRA, ên-rê'kâth êrê-âs dâ sa-vâ'dra, BALTAZAR DE LA (1626-86). A Spanish statesman. He was born in Madrid, and was the second son of the seventh Duke of Albuquerque and his third wife, Ana Enriquez. He was educated at the University of Salamanca and successively became Councilor of State, Councilor of the Indies, Ambassador to Germany, and Viceroy of Peru, Tierra Firma, and Chile, in which capacity he introduced many beneficent reforms and greatly improved the condition of the Indians. He married Teresa María Arias de Saavedra, seventh Countess of Castellar and Marchioness of Malagón, and by courtesy assumed her names and titles.

CUEVAS DE VERA, kwâ'vâs dâ vâ'râ. A town of Spain, in the Province of Almería, 42 miles northeast of Almería (Map: Spain, D 4). It is situated in a plain on the right bank of the Almanzora, 8 miles from its entrance into

the Mediterranean, and is generally well built, with broad and regular streets. It has two spacious plazas, and among the principal edifices are an old Moorish castle and the parish church of the Incarnation, a handsome Doric structure, dating from 1758. A large number of persons are employed in the silver mines of the vicinity; agriculture and stock raising are also important industries. There are some manufactures, principally of pottery. Pop., 1890, 20,341; 1900, 20,603; 1910, 26,130.

CUFA, koo'fa. A ruined city in the Turkish vilayet of Bagdad. It was founded by the Arab conquerors of Persia about a year after the decisive battle of Cadesia, in 637, and speedily became one of the most important centres of Moslem life. After the murder of Uthman, in 656, Ali made it his capital. Even when Muawiya had overthrown the son-in-law of the prophet in 661, established the Umayyad caliphate, and made Damascus the capital, Cufa continued to flourish. At the height of its prosperity it is said to have numbered from 150,000 to 200,000 inhabitants, for the most part of South Arabian stock. Cufa was the stronghold of various revolutionary movements. The schools of Cufa exercised the very greatest influence on the development of Arabian literature and theology. It possessed a famous school of grammarians. (See ARABIC LANGUAGE AND LITERATURE.) The peculiar script affected by its scholars spread far and wide and was for some time generally used by calligraphists in manuscripts of the Koran and inscriptions. (See KUFIC WRITING.) Owing to the unsuccessful political rivalry with Damascus and, after the establishment of the Abbasid caliphate, the growth of Bagdad, the city began to decline already towards the end of the eighth century. Consult: A. Müller, *Der Islam im Morgen- und Abendland* (1885). Wellhausen, *Das arabishe Reich* (1902). C. Huart, *Histoire des Arabes* (1912-13).

CUFFE, WILLIAM ULICK O'CONNOR. See DESART, fourth EARL OF.

CUFTEE, PAUL (1759-1818). An American sea captain, half Indian, half negro, born near New Bedford, Mass. He was a member of the Society of Friends and used his wealth, acquired at sea, in the effort to encourage the colonization of his people in Sierra Leone. He carried out 38 colonists on his own ship in 1815 and died while waiting for permission from England to make further settlements in the colony.

CUFTEY. A name formerly given to negroes in the West Indies and common among the maroons of Jamaica.

CU'IC WRITING. See KUFIC WRITING.

CUI, kû'ê, CÉSAR ANTONOVITCH (1835-). A Russian composer and military engineer, born at Vilna. He studied at the gymnasium, where his father, a survivor of Napoleon's army of invasion, taught French. After studying music with Moniuszko (q.v.) for some six months at Vilna, he entered the School of Engineering and the Engineering Academy at St. Petersburg, becoming subsequently professor of fortification in several military academies, and gradually rising to the rank of lieutenant general. Among his pupils have been several grand dukes, the famous Skobelev, and Nicholas II. During the Russo-Turkish War he was sent to examine the fortifications on the Danube. His report, *Tour Notes of an Engineering Officer from the Theatre of Military Operations in*

European Turkey, was translated into several languages and attracted considerable attention. Among his textbooks the best known are *A Short Manual of Field Fortification* (7th ed., 1894) and *A Short Historical Sketch of Permanent Fortification* (1889). His musical studies he continued with Balakireff (q.v.), making his début with a Scherzo in F major for orchestra (1859). His opera *The Prisoner of Caucasus* (1857-58) and the comic opera *The Mandarin's Son* were performed privately and exhibited no departures from established tradition. In 1864 he became musical critic of the *St. Petersburg Gazette*. He championed the theories of the Young Russian school, attacking the conservative attitude of the critics, rejudging established reputations, subjecting everything to a keen and searching analysis. He received the nickname "Musical Nihilist," and his opera *William Ratcliff* (1869), based on Heine's drama and embodying the new theories of "melodic recitative," met with severe criticism. *Angelo* (1876), based on Victor Hugo's drama, carried the theories even further and met with a similar fate. In 1883 he rewrote *The Prisoner of Caucasus*, adding a new act, and the work had considerable success. *Le Fibustier* (1894), words by Richpin, was successful at the Paris Opéra Comique, and *The Saracen* was favorably received in 1899. In the following year *Mamzelle Fifi* was written, in 1908 *Matteo Falconi*, and in 1909 *The Captain's Daughter*. His purely instrumental works include two scherzi and four suites for orchestra and a number of works for piano. But his talent shows to best advantage where inspiration is derived from words. His numerous songs, both to Russian and to French words, are veritable gems, while his pieces for chorus enjoy great vogue. He was never fond of orchestration and is far behind his Russian colleagues in that line, but for this shortcoming he makes amends through the sincerity and passion of his works. As a critic, in Russian periodicals and the French *Revue et Gazette Musicale*, Cui enjoys an enviable reputation. His *La musique en Russie* (Paris, 1880) is the only sketch of Russian music written with authority, even though it is at times marred by the author's æsthetic views. *The Russian Lied* (1896) is a detailed study of all important Russian song writers, with careful reference to both music and text. Consult Countess de Mercy-Argenteau, *Cesar Cui* (Paris, 1888), and Pougin, *Essai historique sur la musique en Russie* (Turin, 1897).

CUIABÁ. See CUYABÁ.

CUIRASS, kwé-rás' or kwé'- (Fr. *cuirasse*, from ML. *coratium*, breastplate, from Lat. *coracius*, leathern, from *corium*, leather). Originally a jerkin, or garment of leather for soldiers, so thick and strong as to be pistol proof and even musket proof. The name was afterward applied to a portion of armor made of metal, consisting of a backplate and a breastplate hooked or buckled together, with a piece joined to the back called a *culet*, or *garde de reins*, and still worn by some European regiments of cavalry. For illustration, see ARMOR.

CUIRASSIER, kwé-rás-sér' (Fr., from *cuirasse*, cuirass). In modern armies, the name given to certain soldiers of heavy cavalry. They are survivors of the troopers of the sixteenth and seventeenth centuries, who wore helmet and cuirass. There are four regiments of cuirassiers

in the Russian army, and 12 regiments each in the German and French armies. (For illustration, see Plate of ARMOR.) The Russian cuirass is of iron, coated with copper, and weighs 30 pounds; the German is of white metal with a brass plate, and the French of steel with a brass plate, their respective weights being 13½ and 16 pounds. There are no cuirassiers in the British army, although the Life Guards and Royal Horse Guards wear dress cuirasses of steel, costing £3 6s. each, which are discarded on active service. In the time of Queen Mary there were heavy horsemen known as "cuirassiers," who wore body armor over buff coats. They carried swords and pistols, and their reins were strengthened with iron chains. The bodyguard of Napoleon III, Les Cent-Gardes, wore aluminum cuirasses. No cuirass is bullet proof against a direct shot. See CAVALRY, where an historical sketch of mounted troops is given.

CUISSART, kwé-särt' (OF., from *cuisse*, thigh, from Lat. *coxa*, hip). A variety of ancient armor worn by troopers. Cuiassarts consisted of small strips of iron plate laid horizontally over each other round the thigh and riveted together.

CUITLAHUATZIN, kwét-lá-wát-sén', or **CITLAHUATZIN** (1470-1520). An Aztec prince, younger brother of Montezuma II. When the latter was seized by the Spaniards, Cuitlahuatzin, often mentioned as Quetzlavaca, or Cuitlahuac, was also for some time in their hands, but was ultimately released. As the acknowledged leader of the Aztecs after the capture of Montezuma, he led the famous attacks upon the army of Cortés. He also directed the operations of the Aztecs during the retreat of the Spaniards to the coast. He was afterward elected to succeed Montezuma, but died of a pestilence after his installation and was succeeded by his cousin Guatemotzin, the last of the Aztec rulers.

CUJACIUS, ká-já-sí-sis or ku-ya'sí-us, properly **JACQUES DE CUJAS**, zhak de ku'-zhás', or **CUJAUS**, ku'zhó's' (1522-90). A French jurist of the sixteenth century, born at Toulouse. After studying law he was appointed teacher of the law at Cahors (1554) and in the following year gained the chair of law in the University of Bourges, after which he taught successively at Valence, again at Bourges, at Valence, at Paris, and at Bourges, at which last place he resided from 1577 till his death. He was one of the most eminent jurists of his day and is recognized as the founder of the historical school of jurisprudence. His learning was founded on the most diligent study of original manuscripts of the Roman laws. His treatment of these authorities and of the feudal system was classical and reconstructive, free from scholastic subtleties. He had in his library 500 manuscripts on Roman law and by his emendations contributed greatly to remove the obscurities of jurisprudence. A complete collection of his works was edited by Fabrot (10 vols.), at Paris (1658), and reprinted at Venice (1758-83), and at Prato (1834-43). Uhl has edited separately Cujacius' *Animadversiones et Observationes*. Consult: Spangenberg, *Cujacius und seine Zeitgenossen* (Leipzig, 1882); Berriat Saint-Prix, *Histoire du droit romain; Histoire de Cujas* (1821).

CULAMAN, koo-lá'mán. See MANOBO.

CULASI, koo-lá'sé, or **COLASI.** A town of

Panay, Philippines, in the Province of Antique, situated on the west coast, about 47 miles north of San José de Buenavista (Map: Philippine Islands, D 5). Rice, cacao, fruits, and pepper are cultivated. Pop., 1903, 10,966.

CULBERSON, CHARLES A. (1835-). An American legislator, born in Dadeville, Ala., but taken as an infant to Texas. He graduated from Virginia Military Institute in 1874 and in 1876-77 studied law under his father and at the University of Virginia. He returned to Texas to engage in the practice of law, in 1890-94 was Attorney-General of the State and was thereafter, until 1898, Governor. He was chosen United States Senator in January, 1899, and was reelected in 1905 and again in 1911 for the term expiring 1917. In the Sixty-third Congress Culberson was chairman of the Judiciary Committee.

CULDEES (OIr. *céledé*, servant of God, from *céle*, servant + *Dé*, gen. sg. of *Dia*, God). Anchorite monks who came into Scotland from Ireland in the eighth and ninth centuries, and established themselves in many places, but who in the twelfth century had been absorbed by the regular orders, particularly that of St. Augustine. The list of books handed over by the Culdees of Loch Leven to the canons regular under Bishop Robert (c.1144) is the oldest Scottish library catalogue. Their monasteries, which, on the Columban model, were really villages on St. Sori's Island, Loch Leven, at St. Andrews, Monymusk, Abernethy, and at Monfeth, near Dundee, are matters of record. Their abbots were often laymen. The mystery about their origin and fate gave rise to the idea that they were particularly holy and that they retained the primitive Christian faith. So claimed Hector Boece in his Latin history of Scotland (Paris, 1516), as many, especially ardent Presbyterians, have done since. But the facts were established by W. Reeves, *The Culdees of the British Isles* (Dublin, 1864), and W. F. Skene, *Celtic Scotland* (3 vols., Edinburgh, 1876-80). Consult also W. Beveridge, *Makers of the Scottish Church* (New York, 1908).

CULENBORG. See KUHENBURG

CULEX (Lat., gnat). A short pastoral and mock-heroic poem of 414 hexameter lines. A sleeping goatherd is awakened by the sting of a gnat and kills the insect, but finds that it has saved his life by rousing him in time to escape an approaching serpent. The gnat's shade in the night reproaches him whereupon the goatherd builds a tomb for the gnat and celebrates the usual funeral rites. Ancient writers state that Vergil wrote a *Culex*, with the plot described above. Modern scholars have usually refused to charge the extant poem against Vergil; but consult Mackail, "Vergil and Virgilianism," in *Lectures on Poetry* (London, 1911) and Elizabeth S. Jackson, "The Authorship of the *Culex*," in *The Classical Quarterly*, vol. v (1911).

CULEX. See MOSQUITO.

CULIACAN, *kō'lyá-kán'*. The capital of the State of Sinaloa, Mexico, on the Culiacan River, 50 miles from the Pacific coast (Map: Mexico, E 5). It is situated in a broad valley and contains several plazas, those of Rosales and La Constitución being notable, an ancient cathedral, a seminary, and a mint. It is an episcopal see. The city has some manufactures, principally of textiles, and a large tobacco warehouse.

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It is fast becoming an important commercial centre. Culiacan was founded in 1599, with the name San Miguel. Pop., 1900, 10,880; 1910, 13,527.

CULICIDÆ, *kó-lis't-dē* (Neo-Lat. nom. pl., from Lat. *culex*, gnat). A family of nematoceros Diptera, the mosquitoes, with long slender wings, the veins and body bearing flattened scales. See MOSQUITO.

CULILAWAN (*kō'wá-lá-wán*) **BARK**. The bark of a tree of the Moluccas, *Cinnamomum culilawan*, used like cinnamon (q.v.).

CULIN, STEWART (1858-). An American anthropologist, born in Philadelphia, a descendant of Johan van Culin, one of the earliest Swedish settlers on the Delaware. He was educated at a Friends' school and afterward at Nazareth Hall. Leaving this school at the age of 17, he engaged in business, but soon developed a deep interest in scientific matters and, through contact with Dr. Daniel G. Brinton, was led to take up original work in anthropology. In 1883 he was elected secretary of the Numismatic and Antiquarian Society of Philadelphia, and began a study of the Chinese in America, resulting in a series of papers on Chinese games. In 1889 he became secretary of the Archeological Association of the University of Pennsylvania and a curator in the Museum of Archeology, and in 1892 he was appointed director of the museum. In this capacity he represented the University of Pennsylvania at the Columbian Historical Exposition in Madrid, where he was at the same time secretary of the United States Commission. In 1888 he organized the Oriental Club in Philadelphia, of which he became secretary; in 1890 he was elected a fellow of the American Association for the Advancement of Science. He was president of the American Folklore Society in 1897 and was elected to the vice presidency of anthropology in the American Association in 1901. He is author of: *Chinese Games with Dice* (1889); *Chess and Playing Cards* (1896); *Korean Games* (1896); *American Indian Games* (1905).

CULION ISLANDS. See CALAMIANES.

CULLEN, PAUL (1803-78). Cardinal and Archbishop of Dublin. He was educated in Rome, where he became rector of the Irish College and, in 1848, of the Propaganda College. During the revolution of that year he saved the college property by appealing to Lewis Cass, Jr., the American Minister. He became Archbishop of Armagh and Primate of All Ireland in 1849, and Archbishop of Dublin in 1852. He had great executive ability and zeal in the restoration and erection of churches, reformatories, and hospitals. He assisted O'Connell, opposed the Fenians, forbade the clergy to take active part in politics, and advocated at the Vatican Council the definition of papal infallibility. He was the main supporter of the Catholic University at Dublin, but his quarrels with Dr. Newman, its head, wrecked the scheme. In 1868 he was made a cardinal, being the first Irishman to receive that dignity since the Reformation. In 1873 he was sued for libel by a parish priest, who received a farthing damages.

CULLEN, WILLIAM (1710-90). A celebrated Scottish physician, professor of medicine in the universities of Edinburgh and Glasgow. He was born at Hamilton, Scotland, his father being factor to the Duke of Hamilton. He acquired his medical education between 1727

CULMBACH. See KULMBACH.

CULMBACH, kũl'm'băk, HANS VON. See KULMBACH, HANS VON.

CULMINATION (from ML. *culminare*, to culminate, from Lat. *culmen*, OLat. *columen*, height, from *collis*, hill, *celsus*, high). An astronomical term, signifying the passage of a star across the meridian. The star is then at the highest or lowest point of its course. The sun culminates at midday, or 12 o'clock, apparent solar time—which seldom agrees exactly with mean time as shown by a watch or clock. The full moon culminates at midnight. The time of culmination of a fixed star is always exactly midway between the times of its rising and setting, in the case of the sun, moon, and planets it is only approximately so.

CULP, JULIA (1881-). A distinguished Dutch contralto. She was born, Oct. 6, 1881, at Groningen, where she received her first musical instruction on the violin. Her progress was so rapid that she soon appeared in various cities of Holland as a violinist. When fourteen years of age it was discovered that she was gifted with an unusual voice. Thereupon she abandoned her career as a violinist and entered the conservatory at Amsterdam. After completing her course she went to Berlin, where she continued her vocal studies with Etelka Gerster. Her debut as a vocalist took place at Magdeburg in 1901, in a concert with Busoni. The following year she was heard in Berlin and won instant recognition as one of the foremost lieder singers. Her fame spread rapidly all over Germany. Her tours of Austria, France, Italy, Belgium, Spain, and Russia were a series of brilliant triumphs, so that her place as the greatest of all lieder singers was established even before she made her first American tour in 1913. This was so successful that she visited America a second time in the following season, appearing in numerous recitals and with almost every symphony orchestra of importance. Aside from the extraordinary beauty of her voice, which she handles with supreme mastery, her preeminence as a lieder singer is due to her fine musicianship, dramatic intensity, soulful delivery, and unlimited versatility. It is due largely to her art that the genius of one of the greatest of song writers, Hugo Wolf, has found wider recognition.

CULPA. A term of the Roman law, signifying a fault or breach of a legal duty, but later restricted to denote carelessness or negligence. When damage has been done without right and willfully (*dolo*), the doer is always responsible. When damage is occasioned by a careless act or by failure to act as a careful person would act, the person chargeable with carelessness is not usually responsible unless he be under some special obligation to exercise care (*diligentia*). Such an obligation regularly exists only in contractual and quasi-contractual relations, and here the question what degree of carelessness creates liability depends upon the degree of care which the law requires. The standard, in most cases, is the care commonly exercised in similar matters by a good householder (*diligentia boni patris familie*). Exceptionally, in some cases, a person who is habitually somewhat careless is held to that degree of care only which he is accustomed to exercise in his own affairs (*diligentia quam in suis*). This is true when the advantage of the contractual relation is wholly on the other side, as in the deposit, or bailment, of goods for safe-keeping without

remuneration, and also when the other party is chargeable with negligence if he enters into relations with a careless person, as in partnership. By reason, however, of the fiduciary character of these relations, the careless depositary or partner who has failed to exercise even that degree of care which he is wont to exercise in his own affairs is regarded as guilty of willful wrong (*dolus*). In contractual relations very gross carelessness (*culpa lata*) is also treated as willful wrong. Whether this is true outside of contractual relations—whether gross carelessness begets an action in tort—is disputed. Regularly, of course, at Roman law as at English law, an action in tort lies only when willful intent can be shown or presumed. Exceptionally, however, and by statutory rule (*lex Aquilia*), the person who has damaged another's property by a careless act is liable, although no contractual relation exists between the parties.

By the modern civil law, as administered on the continent of Europe, most of the rules of the Roman law relating to *culpa* still obtain. Modern legislators, however, have generally discarded the exceptional standard of the *diligentia quam in suis*; and the French civil code (art. 1383) and some of the codes based on the French, e.g., the Spanish civil code (art. 1089), lay down the broad rule that every person of sound mind who has reached the age of discretion is responsible for damage occasioned by his negligence, whether of act or of omission, but these provisions have not been interpreted as creating a general duty to act in the interest of strangers. For the English and American applications of the civil-law doctrine, see BAILMENT, NEGLIGENCE. Consult the authorities referred to under CIVIL LAW.

CULPEPER, JOHN. An early English emigrant to the Carolinas, leader of the "Culpeper Insurrection." In 1677 and 1678, with Zechariah Gilham (or Gillam) and others, he led a successful insurrection in the northern or Albemarle Colony of Carolina against Thomas Miller, royal collector of customs, who strictly enforced the unpopular customs regulations, and whose office Culpeper seized. He and his followers gained control of the government, but when he went to London to arrange a compromise with the home authorities he was arrested on a charge of treason. He was finally acquitted, however, on the ground that there had really been no authorized government in the Colony at that time to rebel against. In 1680 Culpeper laid out on paper the plan of the city of Charleston.

CULPEPER, or COLEPEPER, THOMAS (?-1719). A grantee (1673) and Colonial Governor of Virginia. In 1673 he received from Charles II for a period of 31 years a grant of the entire territory of Virginia. He was appointed Governor for life in 1675, but did not come to the Colony until 1680. In 1683, having administered the office chiefly for his own gain, being shrewd and unscrupulous to the last degree, he returned to England in spite of his orders, was tried and convicted of corruption, and was deprived of his commission. His daughter Catherine brought his great possessions in dower to Baron Fairfax and his descendants, who were related by marriage to George Washington. Consult Doyle, *English Colonies in America*, vol. i (1882).

CULPER. A local name in Africa for a fish

resembling a perch, but of uncertain position, ichthyologically, which inhabits the Zambezi valley. It burrows in the mud and thus survives droughts, and is exhumed both by animals and the native negroes for food, but is not thought palatable by the white colonists.

CULPRIT FAY, THE. The title of a poem by Joseph Rodman Drake (1816). Its subject is the love of a fairy for a mortal maiden and his expiation of the offense.

CULTIVATION. See TILLAGE.

CULTIVATOR (Fr. *cultivateur*, from ML. *cultivare*, to cultivate, from Lat. *cultura*, cultivation, from *colere*, to till). An agricultural implement extensively manufactured and used in the United States. The common name for it in Great Britain is "grubber." Certain forms are called "scarifiers." It is used for a number of purposes, such as preparing soil for planting, loosening soil between rows of plants, destroying weeds, etc. There are many forms, but usually the essential feature is a triangular or rectangular iron frame in which are fixed tines or teeth, somewhat like those of a harrow, but curved, and so placed as to enter the ground obliquely when the implement moves forward. Handles like those of a plow are provided for control of the implement, and the centre beam of the iron framework projects in front for the attachment of wheels and draft clevises. In some forms the implement is mounted on wheels and provided with a seat for the operator and various levers for the control of the implement. These are called *rider* cultivators, while the simpler forms are known as *walker* cultivators. The two forms are sometimes combined. One of the more modern forms of the rider cultivator is the disk cultivator, in which revolving sharp-edged disks take the place of teeth or tines. See also IMPLEMENTS, AGRICULTURAL; TILLAGE.

CULTURE (Lat. *cultura*, cultivation). When used by anthropologists and historians, the term signifies the complex of habits and customs peculiar to any group of people. Particular customs are designated as traits of culture. See ANTHROPOLOGY, CIVILIZATION, ETHNOLOGY.

CULTURKAMPF, *kul-toor-kämpf*. See KULTURKAMPF.

CULTUS COD. A marine fish (*Ophiodon elongatus*) of the family Chiridae, abundant from Lower California to Alaska, and one of the most important food fishes of the Pacific coast, where it is also known as "ling," "buffalo cod," and "blue cod." *Cultus*, in the Chinook jargon, means "common" or "ordinary," and was applied to distinguish this species from the true cod of the coast. It is codlike in form, dark brown above, variously spotted, and bluish green below, the flesh being also bluish; and reaches a length of 5 feet and a weight of 30 to 40 pounds, but much smaller specimens are usually brought to market. It lives about rocky places, sometimes in considerable depths, and spawns in summer; and it feeds upon fishes and crustacea and is excessively voracious, often being taken by seizing a fish upon the angler's hook. Its flesh is regarded as of superior quality.

CULVERIN (Fr. *couleuvrine*, ML. *colubrina*, culverine, from Lat. *coluber*, serpent). In early times, any small gun, the name being derived from the serpent-shaped handles cast on the piece. In the sixteenth century and later the name was used with reference to the heavier cannon, like the 18-pounder. Variations of the

name were *culver* or *whole culver*, referring to the heavier guns, *demi-culverin* to the smaller.

CULVER'S PHYSIC, CULVER'S ROOT.

See LEPTANDRA.

CULVERT (probably from Fr. *couloure*, drain, from *couter*, to flow, from Lat. *colare*, to filter, from *colum*, sieve, influenced in termination by analogy with *covert*). An artificial channel for carrying a small stream underneath a canal or the embankment of a roadway or railway. For very small streams vitrified clay pipe or cast-iron pipe is used for culverts. For streams of larger size stone box culverts are employed, consisting of two parallel masonry walls covered over with stone flagging and having a paved bottom. Where stone is scarce, box culverts are sometimes built of timber, and sometimes, instead of stone flagging, a roof of iron beams imbedded in a concrete slab is employed. Large culverts are usually built with parallel masonry side walls, supporting a stone or brick roof arch. With the increased use of concrete in railway engineering this material is increasingly used, both in the form of plain arches and various forms of reinforced concrete structures. A culvert, besides the passageway for the water, has wing walls at one or both ends to hold the embankment in place and protect it from the rush of the flowing water in times of freshet. A full technical description of culvert construction is given in Baker, *Treatise on Masonry Construction* (10th ed., New York, 1912), and also in *American Railway Engineering and Maintenance of Ways, Bulletin 105* (Chicago, 1908). The various railways have special formulas for the construction of culverts which are referred to with other appropriate matter in Merriman, *American Civil Engineers Pocket-Book* (2d ed., New York, 1913).

CULVERWEL, NATHANIEL. See CAMBRIDGE PLATONISTS.

CUMA/CEA. See CRUSTACEA.

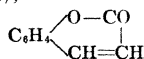
CUMÆ (Lat., from Gk. *Kūmē*, *Kymē*). An ancient city on the coast of Campania, founded conjointly by colonists from Chalcis and Cyme in Eubœa. According to Strabo, it was the earliest of all Greek settlements in either Italy or Sicily, it is probable that it was founded before the middle of the eighth century B.C. (ancient authorities give 1050 B.C.). It soon attained wealth and power, built several harbors or port towns of its own, including Dicæarchia (Pozzuoli) and Neapolis (Naples), and carried on an extensive trade with the interior. From the Chalcidian alphabet of Cumæ the Etruscan and the Italian alphabets seem to have been derived. Its property led to wars with the Etruscans and other Italian tribes, and in 524 B.C. a great land army was routed by the Cumæans. In 474 B.C. Cumæ, thanks to the aid of Hiero of Syracuse, broke the sea power of the Etruscans in a naval battle near the city. The victory seems to have left Cumæ dependent upon Syracuse. Its power now rapidly waned, and in 421 B.C. it was captured by the Samnites and became an Oscan community. About 340, along with Capua, it passed under the control of the Romans and from this period steadily adhered to the fortunes of Rome. In the Second Punic War Hannibal tried to capture it, but was repulsed by Sempronius Gracchus. Towards the close of the Republic it became the municipal capital of the district in which the Roman nobles had their villas

and seacoast residences. It continued to exist as a "quiet" place (Juvenal, iii, 2) down to the close of the Roman Empire, but reassumed a momentary importance during the wars of Belisarius and Narses. Its strong fortress, garrisoned by the Goths, was the last place in Italy that held out against the Byzantine army. The town was finally destroyed, as an abode of pirates, by the Neapolitans in 1205 A.D. Of the ancient fortifications considerable remains may still be traced, and both on the Acropolis and in the lower city there are fragments of architecture and scanty ruins. Underneath the Acropolis are a number of grottos and subterranean passages of unknown origin and purpose. One of these caverns was the seat of the oracle of the Cumæan Sibyl (q.v.). About the city lay cemeteries, showing Greek, Samnite, and Roman graves. Recent excavations here have led to the view that there was on the site of Cumæ a pre-Hellenic settlement. Consult: Beloch, *Campanen im Alterthum* (Breslau, 1890); Pellegrin, *Monumenti dei Lincei*, xiii (1903); Patroni, *Atti del congresso di scienze storiche*, v (1904).

CUMÆAN SIBYL. The most famous of the ancient sibyls. She has been represented pictorially by several of the great masters. The most noted examples are paintings by Michelangelo in the Sistine Chapel, and by Raphael in the church of Santa Maria della Pace in Rome. See **CUMÆ SIBYL**.

CUMANÁ, koo-má-na' A town in the State of Bermudez, Venezuela, situated on the Manzanares River, near its mouth, on the Gulf of Cariaco (Map, Venezuela, E 1). It has a college and is the seat of a United States consular agent. The town is an important commercial centre, its trade being promoted by an excellent roadstead and harbor, which are dominated by the fort of San Antonio on a hill overlooking the town. It exports cacao, sugar, coconuts, tobacco, pearls, and hides. Pop., 12,225. The suburbs of San Francisco, Guayquerías, and Seritos have an aggregate population which equals that of the mother town. Cumaná, possibly the oldest city in America, was founded by Jácomo Castellón, in 1523, under the name of Nueva Córdoba (not far from the settlement made in 1520 by Gonzalo de Ocampo, under the name of Nueva Toledo), and became in the following year capital of the newly erected Province of Nueva Andalucía. It has suffered considerably from earthquakes, notably in 1766 and 1853.

CUMARIN, or COUMARIN (from *cumarou*, the Gallicized form of the native name of the Tonka bean),



The anhydride of cumaric (ortho-oxy-cinnamic) acid. It is a colorless, crystalline substance, melting at 67° C. and boiling at 201° C. It has an exceedingly agreeable odor. It is found in various plants, including the Tonka bean (the seeds of the *Dipteryx odorata* and *oppositifolia*); the woodruff (*Asperula odorata*); the melilot (*Melilotus officinalis*); a number of grasses, such as the sweet-scented vernal grass (*Anthoxanthum odoratum*); the faam or faham leaves (*Angrecum fragrans*), much prized among Asiatics for their vanilla-like scent. The Indian sarsaparilla (the root of *Hemidesmus indicus*), etc. Cumarin is soluble in hot water and in

alcohol and ether. It may be obtained from Tonka beans by extracting with alcohol. It has also been prepared synthetically by heating salicylic aldehyde with sodium acetate and acetic anhydride. Tonka beans have been used to impart the odor of cumarin to snuff. Cumarin is also employed in perfumery and in preparing the beverage well known in Germany as *Mastrank* ('May drink'), which is made by adding a small quantity of pure cumarin to wine.

CUMBERLAND. A peninsula of Baffin Land, forming the west coast of Davis Strait (Map; Canada, S 3). It cuts off the gulf known as Cumberland Sound.

CUMBERLAND (AS. *Cumbria*). The extreme northwest county of England (Map: England, D 2). It has 75 miles of coast and an area of 1520 square miles. A little more than half of the county is cultivated, the rest is covered by mountain and lake. The highest peaks of the Cumbrian Mountains (q.v.) are in the lake region, whence valleys radiate in all directions, gradually ending in a flat coastal belt. The chief rivers are the Eden and Derwent. Mineral wealth abounds, chiefly coal, iron, and lead. Dairy farming and domestic manufactures are carried on. The chief towns are Carlisle, the capital, Whitehaven, Brampton, Workington, Maryport, and Millom. Pop., 1901, 266,933; 1911, 265,780. Consult Ferguson, *History of Cumberland* (London, 1890), and Wilson (ed.), *The Victoria History of Cumberland* (Westminster, 1901).

CUMBERLAND. A city and the county seat of Allegany Co., Md., 152 miles by rail west-northwest of Washington, D. C., on the Chesapeake and Ohio Canal, and on the Pennsylvania, the Baltimore and Ohio, the Cumberland and Pennsylvania, and the Western Maryland railroads (Map: Maryland, C 2). It is in a remarkably picturesque locality on the Potomac River, some 650 feet above tide, on the outer edge of the Cumberland-George's Creek coal region, and ships vast quantities of semibituminous coal. There are extensive rolling mills for the manufacture of railroad materials, iron foundries, steel-shafting works, railroad shops, tanneries, brickworks, dyeing and cleaning works, flour mills, glassworks, distilleries, silk and tinplate mills, and cement works. Cumberland was laid out in 1785 on the site of Fort Cumberland, which was erected in the winter of 1754-55 at the outbreak of the French and Indian War. The town was incorporated in 1815, becoming a city in 1850. It adopted the commission form of government in 1909. A new half-million-dollar water-works system and the electric-light plant are owned by the city. Pop., 1900, 17,128; 1910, 21,839. Consult Lowdermilk, *History of Cumberland* (Washington, 1878).

CUMBERLAND. A town in Providence Co., R. I., 6 miles (direct) north of Providence, on the Blackstone River, and on the New York, New Haven, and Hartford Railroad (Map: Rhode Island, C 2). Cumberland contains the only Cistercian Trappist Monastery in New England; Nine Men's Misery, a cairn under which are buried nine men who were killed in one of the early Indian wars; the Catholic Institute Association (nonsectarian); the Elder Ballou Meeting House, built about 1740; and the grave of William Blackstone, the first white settler in Rhode Island. It has granite quarries, some deposits of copper, gold, coal, and iron, and extensive manufactures of horseshoes, cotton,

silk, worsted goods, and women's clothes, etc. Cumberland was incorporated in 1747. The government is administered by a council, elected by the people, a police commission is appointed by the governor of the State. Pop., 1900, 8925; 1910, 10,107.

CUMBERLAND, THE. A Federal war vessel under the command of Lieut. George U. Morris, sunk by the Confederate ram *Merrimac* in Hampton Roads, March 8, 1862. She went down firing and with colors flying and carried with her a hundred of her crew.

CUMBERLAND, DUKE OF. See WILLIAM AUGUSTUS, DUKE OF CUMBERLAND, and ERNST AUGUST, KING OF HANOVER.

CUMBERLAND, EARL OF. See CLIFFORD, GEORGE.

CUMBERLAND, RICHARD (1631-1718). An English moralist. He was born in London, educated at St. Paul's School and at Cambridge, where he became a friend of Pepys; appointed in 1658 to the rectory of Brampton, Northamptonshire, and in 1667 to the living of All Hallows, Stamford. In 1691 he was made Bishop of Peterborough. His work, *De Legibus Naturæ Disquisitio Philosophica* (1672), translated into English by John Maxwell in 1727 and into French (1744), was one of the first protests against the egoism of Hobbes's ethics. He maintained therein that "the common good of all" is the chief end and ultimate standard of morality, and he is thus one of the forerunners of the well-known English Utilitarians. Consult: Spaulding, *Richard Cumberland als Begründer der englischen Ethik* (Leipzig, 1894); Albee, "The Ethical System of Richard Cumberland," in the *Philosophical Review* (Boston, 1895); likewise id., *History of English Utilitarianism* (1902).

CUMBERLAND, RICHARD (1732-1811). An English dramatic writer and essayist, born in Cambridge. He was the great-grandson of the Bishop of Peterborough and was the grandson, on his mother's side, of Dr. Richard Bentley. He graduated at Trinity College, Cambridge, in 1750, and two years afterward was elected fellow. Having been appointed private secretary to the Earl of Halifax, he gave up his intention of entering the Church, and became Ulster Secretary during Halifax's term as Lord Lieutenant of Ireland. In 1775 he obtained a sinecure in the Board of Trade and retired to Tunbridge Wells, where he devoted himself to literature and wrote some 54 farces, tragedies, and comedies; pamphlets; essays; novels; and translations from the Greek poets. Many of his comedies were well received, but have not survived. They include *The Brothers* (1769) and *West Indian* (1770), his best play. Goldsmith describes Cumberland with gentle satire in *The Retaliation*, as "The Terence of England, the mender of hearts." His *Memoirs* appeared in 1807, but are considered untrustworthy. Consult George Paston's *Little Memoirs of the Eighteenth Century* (London, 1901).

CUMBERLAND AND TEVIOTDALE, tæ-vi-ot-däl, DUKE OF. English titles borne by the first cousin of Queen Victoria, George V of Hanover (q.v.), and perpetuated by his eldest son, Prince Ernest Augustus, born Sept. 21, 1845.

CUMBERLAND GAP. A pass through the Cumberland Mountains on the State line between Kentucky and Tennessee at the southwestern end of Virginia (Map: Kentucky, H 4). It is a notch about 500 feet deep and in some places so

narrow as merely to allow room for a roadway. The road between Virginia and Kentucky laid out by Daniel Boone in 1769 passed through Cumberland Gap, and over this road journeyed most of the early emigrants to Kentucky. During the Civil War the Gap was of great strategic importance, constituting as it did a kind of passageway between central Kentucky and eastern and central Tennessee. It was occupied by the Confederate General Zollicoffer on Nov. 13, 1861, but on June 17, 1862, the Confederates withdrew on the approach of a superior Federal force under Gen. G. W. Morgan, who took possession on the following day and immediately began to strengthen the fortifications. Various minor skirmishes occurred in the vicinity, in the most important of which, that of August 7, the Confederates lost 125 men in killed and wounded, the Federals 68 in killed, wounded, and missing. On the night of September 17 Morgan secretly evacuated the place, destroyed the fortifications and the war material, and by a skillful retreat saved his command from capture at the hands of the superior Confederate forces in the vicinity. On October 22 General Bragg occupied the Gap. On Sept. 8, 1863, the place again passed into the hands of the Federals under General Shackelford, the Confederate General Frazer surrendering, without resistance, 2000 men and 14 pieces of artillery; and here on April 28, 1865, 900 Confederates surrendered and were paroled.

CUMBERLAND MOUNTAINS, or PLATEAU. The westernmost division of the southern Appalachian physiographic province. The belt of country occupied by the plateau extends through eastern Kentucky and Tennessee and northern Georgia and Alabama nearly to the Mississippi line. The highest (2500 feet) elevations are attained in Kentucky, the descent towards the south and west being gradual. In central Alabama the plateau merges into the Gulf coastal plain. The plateau has a general elevation of 1000 feet. It rises occasionally to 2000 feet (Map: Virginia, A 5). Its eastern edge is defined by a strong escarpment, while on the west the slope is abrupt in Tennessee but less so in Kentucky. The rocks at the surface of the region are of carboniferous age. They include sandstones, limestones, and slates, which inclose valuable deposits of coal. They are usually well timbered with ash, hickory, chestnut, and other hard woods, but the soil is not sufficiently fertile to support a large agricultural population. The slopes of the Cumberland Mountains are drained mostly into the Ohio River by the Cumberland and the Tennessee, the latter river crossing the southern portion of the range after flowing along the greater part of its eastern edge.

CUMBERLAND PRESBYTERIAN CHURCH. See PRESBYTERIANISM.

CUMBERLAND RIVER. A river of Kentucky and Tennessee, rising in the Cumberland plateau, in eastern Kentucky, near the Virginia line. It flows at first generally northwest and then southwest through southern Kentucky and enters Tennessee in long. 85° 30' W. (Map: Kentucky, C 4). It then runs, in a very tortuous course, southwest, west, and then generally northwest, through northern Tennessee, reentering Kentucky nearly at 88°. From this point it approximately parallels the Tennessee River, to its confluence with the Ohio River at Smithland, about 12 miles east of Paducah, Ky. The total length of the river is 688 miles, and its

basin area is about 18,000 square miles. It is navigable for steamboats to Nashville, 193 miles, and for vessels of three-foot draft 325 miles farther, to Burnside, Ky., which is commonly considered the head of navigation.

CUMBERLAND ROAD, THE. A road 800 miles long, which extended from Cumberland, Md., to Vandalia, Ill., and which had an important part in opening up the West and Southwest to settlement from the East. It was begun about 1806, was constructed in sections, and was finished about 1840. It was to have been built by the Federal government out of funds derived from sales of public lands in the States to be traversed; but additional appropriations soon became necessary, and, largely owing to the influence of Henry Clay, the national government advanced the sum of \$6,821,246 for this purpose between 1806 and 1838. For many years the road was under Federal control and was called the Great National Pike, but by 1856 the government had turned over to the various States through which it passed the portions included within each. For many years it was perhaps the chief avenue for Western emigration, and thousands of prospective settlers passed over it from the various Eastern States. Consult. Hulbert, *The Cumberland Road* (Cleveland, 1903); Sparks, *The Expansion of the American People* (Chicago, 1901); and an article "The Old National Pike," in vol. lix of *Harper's Monthly Magazine* (New York, 1879).

CUMBRIA (Lat., the land of the Cymry, or Welsh). An ancient British principality, including Cumberland in England, and most of Scotland as far north as the Clyde. In Scotland, however, the boundaries were indefinite and depended upon the strength of the ruler. Cumbria had a mixed population of Britons, Goidels, and Picts, who, on account of common danger from the Saxons, united and took the name of Cymry. During the sixth century Cumbria ceased to be governed by one ruler and was united only in times of war. The country, however, was hilly and easily defended. Edmund conquered Cumbria in 946, with the help of the King of South Wales, and gave it to Malcolm of Scotland. William II of England annexed Cumbria early in his reign. In 1107 David I of Scotland became Prince of Cumbria, holding it from the English crown.

CUMBRIAN MOUNTAINS. A group of mountains, 37 by 35 miles in length and breadth, in the northwest of England, occupying part of Cumberland, Westmoreland, and Lancashire. This tract, embracing the English lake district, is of great picturesqueness and beauty and much frequented by tourists. There are 25 mountain tops upward of 1500 feet high, including Scafell Pike (3210 feet, the highest mountain in England), Scafell (3162), Helvellyn (3118), and Skiddaw (3054). The deep valleys between the mountains contain 14 lakes, 1 to 10 miles long. The largest of the lakes are Windermere, Ullswater, Conistone Lake, Bassenthwaite Lake, and Derwentwater. Many eminent persons have resided among the lakes, the beauty of which has inspired some of the finest writings of Wordsworth, Coleridge, Southey, Professor Wilson ("Christopher North"), De Quincey, Arnold, and Harriet Martineau. The heavy rainfall of the region is utilized by the conversion of one of the lakes, Thirlmere, into a reservoir for the water supply of Manchester, and some of the streams are used for producing electrical energy.

CUM'MING, ALFRED (1802-73). An American official born in Augusta, Ga. In 1857 he was appointed by President Buchanan Governor of the Territory of Utah, whither he was sent with a protective force of 2500, under the command of Gen. A. S. Johnston, later famous in the Confederate service. He issued, on November 27, a proclamation which declared the Territory to be in a state of rebellion, a copy of which was forwarded to Salt Lake City. Brigham Young, the Mormon president, retaliated by announcing that the region was under martial law and forbidding the expedition to enter. A compromise was subsequently effected, and Governor Cumming assumed office on April 12, 1858. The troops were retained at Camp Floyd until Feb. 29, 1860. In 1861 Cumming was succeeded by Stephen S. Harding.

CUMMING, JOHN (1807-81). A Scottish preacher and author, born in Aberdeenshire. He was educated at King's College, Aberdeen, and in 1833 was ordained to the Scotch Church, Crown Court, Covent Garden, London, where he officiated till 1879. He was very popular as a preacher and lecturer, but is remembered chiefly for his controversies with the Roman Catholic dignitaries and for his interpretation of the apocalyptic writings. The most important of his voluminous publications are: *Apocalyptic Sketches* (1849); *The Great Tribulation* (1859); *Destiny of the Nations* (1864); *Bee-Keeping* (1864); *The Seventh Vial* (1870).

CUMMINGS, AMOS JAY (1841-1902). An American editor and politician, born at Conkling, N. Y. A journeyman printer at 15, he set type in nearly every State of the Union. He was with William Walker in the last "invasion" of Nicaragua (1857), and during the Civil War served as sergeant major of the Twenty-sixth New Jersey Infantry and received the congressional medal of honor. Subsequently he became editor of the New York *Weekly Tribune* and in 1869 joined the staff of the *Sun*, of whose weekly and evening editions he was afterward editor. From 1887 he was a Democratic member of Congress from New York. He was the author of a series of letters, which attracted much attention, written from Florida and California to the *Sun*, over the signature "Ziska."

CUMMINGS, JOSEPH (1817-90). An American educator, born in Falmouth, Me. He was ordained a minister in the Methodist Episcopal church in 1846 and was president of Genesee College (later Genesee Wesleyan Seminary), Lima, N. Y. (1854-57); president of Wesleyan University, Middletown, Conn. (1857-75), and professor of mental philosophy and political economy there (1875-77), and president of Northwestern University from 1881 until his death. He edited *Butler's Analogy of Religion* in 1875.

CUMMINGS, THOMAS SEIB (1804-94). An American miniature painter and author, born at Bath, England. He came to New York early in life and studied there with Henry Inman. He painted miniatures in water color, and many of his sitters were well-known contemporaries of the artist. In 1826 he helped to found the National Academy of Design, was its treasurer for many years and one of its early vice presidents. He also wrote an account of its history, entitled *Historic Annals of the National Academy from its Foundation to 1865* (Philadelphia, 1865). His later life was spent in Connecticut, and Hackensack, N. J., where he died.

CUMMINS, ALBERT BAIRD (1850-). An

American legislator, born at Carmichaels, Pa. He was educated at Waynesburg College, was admitted to the bar in Illinois in 1875, and from that year until 1878 practiced in Chicago. Removing to Des Moines, Iowa, he was in 1898 a member of the State House of Representatives, from 1902 to 1908 Republican Governor of the State, and after filling out the unexpired term in the United States Senate of Senator Allison, was reelected in 1909 for the term expiring 1915. During his period of service in the Senate Senator Cummins came to be recognized as one of its most able and conspicuous members. While Governor of Iowa he had made a thorough study of matters relating to the regulation of railroad and other corporations, and to him was largely due the passage by the Senate of various important measures relating to trusts and railroads. Although not actively affiliated with the Progressive party in 1912, he was in favor of many of the principles advocated by the leaders of that party. After the Republican Convention in 1912 (in which he himself had been mentioned for the presidential nomination), Cummins denounced the action of the majority of the delegates in renominating President Taft and declared that he would not vote for the latter on account of the means used to assure his nomination.

CUMMINS, GEORGE DAVID (1822-76). An American clergyman. He was born in Delaware, graduated at Dickinson College in 1841, and entered the Methodist ministry. In 1845 he took orders in the Episcopal church and was rector of several Episcopal churches in Virginia, Washington, and Chicago. He was chosen Assistant Bishop of Kentucky in 1866, but in 1873 resigned, after being criticized for taking communion with ministers outside the Protestant Episcopal church, and founded the Reformed Episcopal church (q.v.), of which he was the first bishop. Consult the *Memoir* by his wife (New York, 1878).

CUMMINS, MARIA SUSANNA (1827-66). An American novelist, born at Salem, Mass. After receiving a good education she began writing for contemporary magazines. In 1854 she scored an immense success with her story *The Lamplighter*—more than 100,000 copies in all being sold, a surprising sale for ante-bellum fiction. Her later books are negligible, and her reputation has not been maintained, although *The Lamplighter* is still read.

CUM'NOR HALL. 1. An old manor house, near Oxford, of which only a few ruins remain—the place where Amy Robsart was imprisoned, as mentioned in Scott's *Kenilworth*. 2. A ballad of that name by W. J. Meikle, supposed to have suggested to Scott the idea of *Kenilworth*.

CUMONT, ku'mōn', FRANZ VALÉRY MARIE (1868-). A Belgian writer on Oriental religions. He was born at Alost, eastern Flanders, and studied at the universities of Ghent, Bonn, Berlin, Vienna, and Paris; from 1892 to 1910 he was professor in the University of Ghent, and from 1899 to 1912 curator of the Royal Museum at Brussels. In 1913 he was made an associate member of the French Academy of Inscriptions. His principal works are on the Eastern cults that took root in Rome about the beginning of the Christian era: they include *Textes et monuments relatifs aux mystères de Mithra* (1894-1901), partly translated by McCormack in 1903 as *The Mysteries of Mithras: Catalogus Codicum Astrologorum Graecorum* (1898 et seq.); *Studia Pontica* (1901-11, with Anderson); *Les reli-*

gions orientales dans le paganisme romain (1906; 2d ed., 1909; Eng. trans., 1911); *Recherches sur le manichéisme* (1908-12); *Astrology and Religion in Antiquity* (1912).

CUMULATIVE VOTING. A method of voting at elections for office and in representative assemblies, intended to obviate the inconveniences of the majority system by giving proportional weight to the minority vote. As commonly practiced, each voter is permitted to cast as many votes as there are candidates for a given office, and he may distribute his votes or give them all to one candidate, as he may choose. It has been advocated for many years, both in England and the United States, as an important measure of electoral reform, but has made headway slowly. The system has been employed to some extent in Illinois and Michigan and in parliamentary elections in England. Its constitutionality was established by a decision of the Supreme Court at Michigan in 1891. See ELECTION; ELECTORAL REFORM.

CUMULUS. See CLOUD.

CUNA, kō'nā. A linguistic stock of American Indians at one time occupying the Isthmus of Panama, in Colombia, from the Chagres River to the Atrato, in Colombia. They are also known as Darien or San Blas Indians, likewise Tules, etc. They are extremely jealous of the whites, and have lately withdrawn farther into the interior. They are of small stature, but athletic and of light complexion, some of them even approaching the blonde type. They formerly lived in villages of communal houses, cultivated corn and cotton, and worked gold obtained from the streams and mountains. The women were clothed, but the men usually went naked. They used poisoned arrows. They have never been entirely subdued and still retain their love for freedom and wild life. Rivet attaches the Cuna language to the Talamanca-Barbacoa group of his Chibchan stock. For recent literature on the Cunas, consult Mrs. Bell, in *Smithsonian Report* for 1909; Pittier de Fabrega, in *National Geographical Magazine* for 1913; and several articles of an ethnological and linguistic nature by Dr. J. Dyneley Prince in the *American Anthropologist* for 1912 and 1913.

CUNARD', SIR SAMUEL (1787-1865). An English shipowner, born in Nova Scotia. He was the founder (1839) of the Cunard line of ocean steamers plying between England and America. He was a member of the Royal Geographical Society and was made a baronet in 1859.

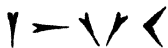
CUNAX'A (Lat., from Gk. Κούναξ, *Kou-nax*). A place in Mesopotamia, on the eastern bank of the Euphrates, probably about 60 miles north of Babylon. It was the scene of the battle fought (401 B.C.) between Cyrus the Younger (q.v.) and his brother, Artaxerxes Mnemon, in which Cyrus was killed. See ANABASIS; XENOPHON.

CUNDINAMARCA, kōon'dē-nā-mār'kā. A department of the Republic of Colombia (Map: Colombia, C 3). Its area was estimated at over 79,691 square miles, but in 1909, in the new territorial division, it was reduced to 8046 square miles (*Statesman's Year Book*, 1913). This description applies to the old department, as the new boundaries are not defined. The western portion belongs to the Eastern Cordilleras, and the basin of the Magdalena, while the remainder forms a part of the Orinoco basin. Numerous rivers flow across it, the largest of which are the

Guahibos and the Guayabero. All the eastern streams are tributary to the Orinoco. The soil, with the exception of the mountain regions, is very fertile, but only a small portion is cultivated. The chief crops are corn, wheat, coffee, tobacco, cacao, and sugar. The chief exports are cinchona and tobacco. Bogotá, the capital of the State of Cundinamarca, is also the capital of Colombia. Cundinamarca derives its name from an old American goddess and before the conquest of the land by the Spaniards was one of the chief regions of native civilization, as is proved by numerous remains found in the state. The population of the new department in 1912 was 715,610.

CUNDURANGO, kûn'dû-rân'gò (Quichua, eagle vine). A vine growing in northern South America. It contains a strong bitter principle and was at one time claimed to be valuable in the cure of cancer, as a remedy for which it was sold in the United States at enormous prices. Subsequently it was found to be worthless for the cure of that disease, although it is still claimed to be valuable as a blood purifier. It is not recognized in the American pharmacopœias, although it is still given in the German.

CUNEIFORM INSCRIPTIONS. The term "cuneiform" (derived from Lat. *cuneus*, wedge, and *forma*, shape) appears to have been employed for the first time by Thomas Hyde (died 1703), and is now commonly used as a designation for the script most prevalent in western Asia before the adoption of some form of the alphabet (q.v.). It is generally held that this writing was invented by the Sumerians (q.v.). Whether they brought it with them into Babylonia, or developed it after their settlement in that country, cannot yet be determined. While the arguments formerly relied upon to prove a non-Babylonian origin have lost some of their force, new considerations have been urged that are not without cogency, but a decision is at present impossible. The earliest texts are more than 6000 years old, and the latest inscriptions come from the first century B.C. The script is composed of wedge-shaped characters consisting of combinations of the five elements:



which often become exceedingly complex. Many of them are polyphonous, so that one cuneiform group may represent a large number of entirely different combinations of sounds. As a rule, the writing is syllabic, each character representing not a letter, but an entire syllable. There are also ideograms, standing for whole words, or serving as determinatives to indicate the class to which an object belongs. In some of the systems, however, as in the Mitanian, Arzawan, Chaldean, Susian, and notably the Persian, there is a tendency to simplify the script by assigning one value only to each sign, to use signs for single vowels, and to eliminate the majority of the ideograms.

Originally the cuneiform signs, like the Egyptian, Hittite, Cretan, Chinese, and Mexican, were pictographs. This was already suggested by Oppert in 1863, and the theory was accepted by Ménant, Sayce, Hommel, Hilprecht, and others. But before the discovery of early linear inscriptions no definite proof could be adduced. A new direction was given to the investigations as to the origin of the cuneiform characters by

Delitzsch, who in 1896 propounded, with much learning and ingenuity, a peculiar view concerning a class of signs to which the Babylonians gave the name of *gunu*. These 11 signs he regarded as compounds of simpler forms and additional wedges prefixed, added, or inserted to heighten or intensify the meaning. In spite of the opposition of Jensen (*Deutsche Literaturzeitung*, July 31, 1897) and Peiser (*Mitteilungen der Vorderasiatischen Gesellschaft*, 1897, pp. 316 ff.), this view won very general acceptance. Other scholars added 21 signs that seemed to them to be of the same nature as the *gunus*. An important contribution was made by Thureau-Dangin in 1898-99, who examined 563 signs, presented the linear forms then known, indicated the modifications of many signs, lucidly explained the change in the *ductus* of the script, and strengthened the conviction of its pictorial origin. Serious doubt was cast upon Delitzsch's theory by Ogden in 1911. She showed that in the case of the 11 *gunu* signs some were originally pictures of wholly dissimilar objects, some were pictures of different, though related, objects, and none revealed a heightening of the meaning through the additional wedges. Her conclusions in regard to the 21 signs supposed to be of the same character were equally subversive of the theory. Finally, Barton, in 1913, published a work on the origin of Babylonian writing in which he presented a collection of the actual pictographs, found in early inscriptions, traced their development, identified and registered in an index 288 different pictographs, indicated the signs formed by doubling, tripling, or quadrupling, noted 209 compounds of dissimilar signs, and furnished explanations of 619 out of a total of 719 characters. According to Barton, the signs are drawn from the human body and its parts, mammals, birds, insects, fishes, trees, stars and clouds, earth and water, buildings, boats, household furniture and utensils, fire, weapons, clothing, implements of worship, nets, traps, pottery, musical instruments, lines and circles. All the meanings of each sign, so far as known, have been considered by him. In a very large number of instances his identifications can be accepted without difficulty. Many may indeed be questioned, but the principle seems to have been established without peradventure. As characteristic examples, the following pictographs actually occurring in early inscriptions and some of their later modifications

may be given: 1. archaic, by Gudea, later, 'star,' also meaning 'heaven,' 'god,' 'lord,' 'king,' etc.; 2. archaic, by Hammurapi, later, 'rising sun,' 'sun'; 3. archaic, by Gudea, later, 'bird'; 4. archaic, by Manishtusu, later, 'fish'; 5. archaic, by Hammurapi, later, 'hand'; 6. archaic, later,

'foot,' 'go,' 'lead,' etc. In his *Grundzüge der sumerischen Grammatik* (Leipzig, 1914) Delitzsch recognizes fully the pictographic origin

of the cuneiform characters, but does not refer to the criticism of his *gunu* theory.



To the period of linear writing the peculiar arrangement of the signs goes back which is characteristic of the early inscriptions down to the time of Gudra. The surface on which the inscription was placed was divided into horizontal bands or strips, and each of these into squares or sections. So far as the long bands were concerned the text ran from the top down on the obverse and from the bottom up on the reverse. Within the squares of which they were composed the signs were arranged vertically, but within each band the text was read from the right to the left. This was later changed: the signs within each square fell into horizontal lines, the one at the top becoming the first on the left-hand side, so that the writing assumed a direction from left to right, while the bands became columns. Thureau-Dangin has suggested, as an explanation of this change, that the tablet was held in such a manner that it was possible to maintain in theory that the writing was vertical, though in reality the effect was to make it horizontal.

The transition from the linear to the cuneiform signs was no doubt influenced by the writing material and the implement used. As the Germanic runes, which were carved on wood, are angular in shape and avoid curves, while the Singhalese, which was written on palm leaves, has almost no straight lines, which would split the leaf, so the cuneiform received its shape from the soft clay that was substituted for stone and the stylus that took the place of the chisel. On the clay tablet the straight line was the easiest stroke, and the triangularly prismatic stylus formed the peculiar arrow-shaped head of the wedge. The clay bricks, after the writing was finished, were carefully baked or dried in the sun. A chisel was of course employed for longer inscriptions carved in the rock or on stone slabs and cylinders.

History of Decipherment. Although allusions are made to cuneiform texts by Herodotus, Diodorus, Strabo, Plutarch, Arrian, and the epistles ascribed to Themistocles, on the age of which consult Bentley, *Dissertation upon the Epistles of Phalaris* (1690), all remembrance of them seems later to have been lost. But European travelers were at length attracted by the signs on the mountain wall at Behistun. Josafat Barbaro, in 1472, noticed them; Pietro della Valle, in 1621, copied some of the signs; Carsten Niebuhr brought back to Europe and published the first complete and accurate copies in 1777. Upon these copies of the great trilingual inscription of Darius I in Persian, Susian, and Babylonian a number of scholars worked with varying success. The Persian was the first to be deciphered. Tychsen identified the wedge marking the division of words and four other signs; Münster found the true value of another sign and conjectured that an Achaemenian king was the writer; Grotefend read the name of Darius; Rask found the plural ending; Eugene Burnouf recovered all the signs of this cuneiform system; and Henry Rawlinson independently discovered the interpretation of the text he had himself copied afresh from the Behistun rock. Westergaard began the decipherment of the Susian text in 1844. Of the Babylonian text Löwenstern made out the sign for "king." But it was through the efforts of Rawlinson, Hincks, De Sauley, and Oppert that the Semitic version

yielded up its secret. The knowledge of modern Persian, and especially of Pahlavi (q.v.), was of much value in the deciphering of the ancient Persian text; and the similarity of the Babylonian version to well-known Semitic dialects assisted greatly in the deciphering of the third text. The fact that the same text is repeated word for word in the three languages was of great importance for the translation of the Susian, where no modern or hitherto known language gave any help. (On the recently found Aramaic version, see BEHISTUN.) The decipherment of the Chaldian and the peculiar form of the Assyrian found in Cappadocia is largely the work of Sayce; the Mitanian and Arzawian have been deciphered by Sayce, Jensen, Peiser, and Winckler chiefly; the Anzanian by Schei and Weissbach, and the Elamitish by Frank.

Sumerian. There are a number of distinct systems of cuneiform writing. Among these may be mentioned Sumerian, Akkadian (adopted for the Assyrian, the Lulubian, and the Gutian as well as in Egypt, Syria, and Asia Minor), Elamitish, Anzanian, Susian, Mitanian, Arzawian, Hittite, Chaldian, and Persian. The Sumerian was first written in linear form, but even after the introduction of the wedge-shaped characters the pictographic origin was for a long time quite apparent. The bulk of the signs consists of ideograms. The real pronunciation of many of these signs is doubtful. It is customary to transliterate the Sumerian signs with capital letters. Especially is this the rule when they occur in Akkadian texts, and the pronunciation or equivalent on the lips of the Semites is uncertain. While the syllabaries and bilingual texts were of great value, the discovery in recent years of numerous Sumerian texts not accompanied by a Semitic translation has greatly increased our knowledge both of the language itself and the Sumerian form of writing. The Sumerians failed to single out the individual consonantal sound which the Egyptians did; but they added to their ideograms phonetic syllable signs, thus preserving the vowel, so often lost to us in the Egyptian hieroglyphics. The numerical system, as in all cuneiform writing,

consists of simple wedges, , for units, and angles, , for tens. After 60, which, like the

first digit, is represented by the simple vertical wedge, the system becomes sexagesimal, differing in this respect from the Elamitish. Consult Delitzsch, *Grundzüge der sumerischen Grammatik* (1914) and *Sumerisches Glossar* (1914); and see SUMERIAN LANGUAGE.

Akkadian. Probably already before Sargon I of Agade the Semitic Akkadians had taken over from the Sumerians the art of writing. They had to adapt, however, the cuneiform system to the needs of their own language. The script became more distinctly syllabic. Sometimes the syllables were open, sometimes closed: sometimes a syllable was divided so as to consist of only a consonant and a vowel, as *par* or *pa-ar*. But there are not only ideograms taken over from the Sumerian, but also such created by the Semitic Akkadians. In reading, these ideograms were not pronounced according to their phonetic value, but the corresponding Semitic word was used. With the homophones, or different signs for the same sound, the polyphones, or signs with various values, and the ideograms, there are over

700 characters. To simplify the reading determinatives are used, as in Egyptian, by which the noun is shown to denote a class of objects, being a god, a man, an animal, a country, or the like. The clay tablets that form the largest part of the inscribed objects are of various sizes, some being as large as 9 by 6 inches, while others are little more than an inch square. The character of the writing also varies, so that the later Assyrian or Chaldaean letters are different from those of earlier times. Seals, cylinders, stone obelisks, statues of bulls and lions, and the walls of palaces were favorite places for texts to be inscribed. The writing is often exceedingly minute, some tablets having six lines to the inch, so that the complex characters must be read with the help of a magnifying glass. It is probable that the letters were cut with such assistance, as lenses of considerable power have been found among the ruins of Babylonian cities. From the Akkadians the Assyrians adopted the cuneiform writing, though there were slight differences in the pronunciation of some signs. The Lulubians and Gutians at an early time likewise adopted it. With the language itself it went to conquered Elam, to Asia Minor, where it is found in the so-called Cappadocian tablets as well as centuries later in the Boghaz-keui tablets, and to Egypt and Syria, as the Tell el-Amarna tablets and those found at Lachish, Gezer, Taanach, Megiddo, Zenzirli, and elsewhere show. Thus far, however, no tablet has been found in Syria on which Hebrew or Aramaic is written in cuneiform characters. The theory that a large part of the Old Testament was written originally in cuneiform letters, and possibly in the Babylonian language in earlier days and in Aramaic later, as the *lingua franca* of the time, presented recently by Naville, *Archæology of the Old Testament* (1912), can scarcely be regarded as plausible.


The ancient Akkadian scholars designated the cuneiform signs by names. A systematic presentation of these names was given by Brünnow in his *Classified List of All Simple and Compound Ideographs* (Leyden, 1887). Since then it has been briefly treated by Weber in 1907, and most fully by Viktor Christian, *Die Namen der assyrisch-babylonischen Keilschriftzeichen* (Leipzig, 1913).

Elamitish. In Elam, as in Babylonia, the cuneiform system developed from pictographs. But the combinations of lines and wedges are entirely different from those of the Sumerians or Akkadians. It is indeed a syllabic writing, with a few determinatives, and this has been regarded as indicating dependence upon Babylonia; but in view of the great age of Elamitish civilization, and the uncertainty as to the origin of the Sumerian, the question must be left open. It is significant that the numerical system and the signs used in it are decimal, and not sexagesimal as in Babylonia. The decipherment by Frank ("Zur Entzifferung der elamischen Inschriften," in *Abhandlungen der Berliner Akademie*, 1912), with the aid of the bilingual inscriptions of Basha-shushinak, has shown that the language is substantially the same as that in the Anzanian inscriptions. The script seems to have disappeared after the middle of the third millennium B.C.

Anzanian. This system, used for the native language of the Hatamti or Anzanian tribes, is found in inscriptions of kings from the twelfth century to Achæmenian times. It shows already

strong tendencies in the direction of the later Susian, and has sometimes been called Middle Susian, though Scheil, to whose investigations we owe our knowledge of it, prefers the term "Anzanian."

Susian. The third variety of the cuneiform inscriptions in Elam is very much simpler. Mordtmann suggested the name "Susian," which has now taken the place of many other names that have been proposed by scholars at different times. It is also termed the "language of the second form," in allusion to the fact that it is found in the second of the three versions of the Achæmenian inscriptions. This system contains 96 syllabic signs, which at times, however, show a distinct approach to alphabetic values. Like the other cuneiform systems, the Susian possesses ideograms and determinatives, having 16 of the former and 5 of the latter. It is noteworthy that each ideogram, excepting for *sun-ku*, 'king,' which already has one determina-

tive, is followed by the determinative  *id*.

The readings of the Susian characters are in general fairly clear, although there is still uncertainty about some words.

Mitanian. The Tell el-Amarna tablets acquaint us with the language and script of the Mitanians, a people living in Mesopotamia in the fourteenth century B.C. The language seems to be akin to the Hittite; the script is a development of the Akkadian.

Arzawian. The Tell el-Amarna tablets also contain a letter from the King of Egypt to the King of Arzawa, a country that is probably to be sought east of Cappadocia and north of Mesopotamia in the territory afterward occupied by the Chaldeans around Lake Van. It is written in the language and cuneiform characters of Arzawa. The Arzawian language seems to be nearer the Hittite than the Mitanian, it is also found in another letter referring to the "sons of Lapaya."

Hittite. Through the discoveries of Winckler it is now known that the Hittites themselves, in addition to their peculiar system of hieroglyphics, also had adapted for their use a system of cuneiform writing based on the Assyrian or Babylonian, and possibly upon the form that had been in vogue among the Babylonian and Assyrian colonies in Cappadocia. At Hatti, the modern Boghaz-keui, numerous tablets and fragments of tablets, evidently written in the native language, but in cuneiform script, were found along with those written in Babylonian. The character of this system is likely to resemble that of the Arzawian, but before publication of these important tablets, which is now eagerly expected, judgment upon all such points must be held in suspense.

Chaldian. The cuneiform inscriptions which are found in Armenia, chiefly in the neighborhood of Lake Van, are written in a language which is regarded by some scholars as related to the modern Georgian dialects. The inscriptions, which come from the ninth and eighth centuries B.C., were first noted by Saint-Martin in 1823, and studied by Schulz, who was murdered by the Kurds in 1829, before his researches were completed. Despite the erroneous view held by one of the early investigators that the language of these texts was Armenian, while another more naturally tried to read them as Assyrian, researches into them were at last suc-

cessful largely through the efforts of Sayce. The alphabet of the Chaldian cuneiform inscriptions is an obvious modification of the Assyrian characters. It is relatively extremely simple, since polyphones are discarded, and the number of signs is but 158, including 51 ideograms and 7 determinatives. The type of this script, like the Susian, forms a kind of transition between the Assyro-Babylonian and the Persian, since it has partly given up the syllabic system and often approximates the alphabetic form. Some of the determinatives, as those for god and man, and the numerical system, are borrowed from the Assyrian system of writing.

Persian. The most simple of all the cuneiform systems, and the one which, as stated above, gave the key to all the others, is the Persian. This is employed from the sixth to the fourth century B.C. in the tablets of the Achaemenians, Darius the Great, Xerxes, Artaxerxes I, II, and III, and Cyrus the Younger, together with a few seals of private persons. By far the most important text is that of Darius at Behistun, which is about 413 lines long. Other inscriptions, some of them of great value, are found at Persepolis, Susa, Naq-i-Rustam, Elvand, Kirman, Hamadan, and Murgahab. In addition, there are shorter tablets at Van, where the most important Armenian inscriptions exist, and at Suez. The trilingual inscription of Behistun was known to Diodorus Siculus (q.v.) in the first century B.C., who says that the deeds of Semiramis were carved there "in Syrian letters." The Persian cuneiform characters are almost entirely alphabetic, each sign standing either for a vowel or for a consonant plus a vowel. Traces of the earlier syllabic system may perhaps exist in the case of characters which, like some of those found in the Chaldian inscriptions, have different forms according to the following vowel, as

→K, ja, but →E, ji. The Persian system

possesses 36 letters, in addition to which there are four ideograms, for king, land, earth, and Ahura Mazda. Polyphones and homophones are altogether lacking, and the only possible trace of a determinative is in the oblique wedge, already mentioned as the first cuneiform character to be deciphered, which marks the end of a word. The Achaemenian kings probably derived the use of this system of writing from the Medes, as is suggested by Ed. Meyer (*Geschichte des Altertums*, 3d ed., 1913, i, 2, p. 337). But no Median cuneiform inscription has yet been found.

The difference in the three systems represented in the Behistun inscription may be illustrated by reproducing the name of Darius in Persian, *Dāriyauš*, Susian, *Tariyauš*, and Babylonian, *Dāriyauš*:

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in Madagascar, and he was distinguished for his conduct in the East. In 1514 he was made special ambassador to present to Pope Leo X the new possessions of Portugal. Upon his return he was made one of the special council of the crown. Da Cunha was the discoverer of three volcanic islands in the Atlantic, one of which bears his name.

CUNIBERT, SAINT (c.590-663). In Latin, *Honobertus*. One of the earliest bishops of Cologne. He was consecrated in 623, was present at the synods of Rheims (625) and of Clichy (626), and soon took a place beside Pepin as one of the most influential men in the kingdom of the Franks. He educated Sigebert III and other Merovingian princes; was prominent in the revision of the Salic and Ripuarian laws, and in drawing up the Alemannian and Bavarian codes, and spread the power of the Church over Saxony, Westphalia, Frisia, and part of France. He died after forty years in the bishopric.

CUNLIFFE, JOHN WILLIAM (1865-) An American educator and literary critic. He was born in Bolton, Lancashire, and was educated at the University of London (Litt.D., 1892) and at Owens College, Manchester. He taught English literature at McGill University, Montreal, from 1899 to 1906, at Columbia University in 1906, and at the University of Wisconsin until 1912. He then became professor of English and associate director of the school of journalism, Columbia University. He wrote *The Influence of Seneca on Elizabethan Drama* (1907), edited Gascoigne's *Supposes* and *Jocasta* (1906), and a complete edition of Gascoigne (1907-10, in *Cambridge English Classics*), and "Eastward Hoe" in vol. II of Gayley's *Representative English Comedies* (1913), and contributed to vols. III and V of the *Cambridge History of English Literature* on "A Mirror for Magistrates," Gascoigne, and early tragedy.

CUNNER. A small, brown labroid fish, common in summer about all the eastern shores of the United States, where it affords amusement to hosts of amateur anglers who fish for it from wharves and anchored boats. It is closely allied to the tautog, but less valuable, and is variously known as burgall, chogset, blue perch, sea perch, nipper, etc., and to ichthyologists as *Tautoglabrus adspersus*.

CUNNINGHAM, SIR ALEXANDER (1814-93). An English soldier, archaeologist, and author, born at Westminster, son of the poet, Allan Cunningham. He studied at Addiscombe, went to India in 1833 as second lieutenant of Bengal engineers, and in 1836 was appointed an aide-de-camp to Lord Auckland. From 1836 to 1846 he was in military and engineering service, in 1846-49 was field engineer in the Sikh wars, and in 1856, with rank of lieutenant colonel, was appointed chief engineer of Burma. In 1858 he was appointed to a similar post in the Northwest Provinces, and, as a major general, retired in 1861. He was from that time until 1865, and again in 1870-85, director general of the Indian Archaeological Survey, editing its *Reports* (23 vols., 1871-86). He made extensive explorations, excavations, and drawings, gathered the most valuable collection of Indian coins yet made, and conducted important researches in the history of Buddhism as revealed by its architecture. In the Lahore Museum is the collection of Græco-Buddhist sculptures which he made and which was arranged by J. Lockwood Kipling. His publications include: *Essay on the Arian*

Order of Architecture (1848); *Bhilsa Topes* (1854); *The Ancient Geography of India* part I, (1871); *Corpus Inscriptionum Indicarum*, vol. I (1877); *The Coins of Ancient India* (1891), and *The Coins of Medieval India* (1894).

CUNNINGHAM, ALLAN (1784-1842). A Scottish poet and miscellaneous writer. He was born in the parish of Keir, Dumfriesshire. His father was for a time a neighbor of Burns, and Allan, as a boy, was present at the poet's funeral. At the age of 11 Cunningham was taken from school and apprenticed to his brother, who was a stone mason; but his spare time was given to song and the collection of traditions. In 1810 he contributed largely to R. H. Cromek's *Remains of Nithsdale and Galloway Song*. The ballads in this collection, though purporting to be ancient popular songs, were Cunningham's own compositions. Removing to London just before this publication, Cunningham became one of the best-known writers for the *London Magazine*. He subsequently obtained a situation in Chantry's studio as foreman, or confidential manager, and thus office he held till the sculptor's death. Among Cunningham's many works are *Songs, Chiefly in the Rural Dialect of Scotland* (1813), *Songs of Scotland, Ancient and Modern* (1825), several romances, and a drama, *Traditional Tales of the English and Scottish Peasantry* (1822), *Lives of the Most Eminent British Painters, Sculptors, etc.* (1829-33), and an admirable life of Burns. Cunningham is the author of a fine sea song, "A Wet Sheet and a Flowing Sea." He died in London. Consult Hogg, *Life*, with selections from works (London, 1875).

CUNNINGHAM, JOHN (1819-92). A Scottish divine. He was born at Paisley and was educated at the universities of Glasgow and Edinburgh. He was pastor at Chieff for 41 years (1845-86). In 1886 he was moderator of the General Assembly of the Church of Scotland and became professor of divinity at St. Mary's College, St. Andrews. His *Church History of Scotland* (1859) is the best work on this subject. He also wrote: *A New Theory of Knowing and Known, with Some Speculations on the Borderland of Psychology and Physiology* (1874); *The Quakers from their Origin to the Present Time. An International History* (1868).

CUNNINGHAM, JOHN F. (1842-). An American Catholic divine, born in County Kerry, Ireland, educated at St. Benedict's College, Atchison, Kans., and at St. Francis Seminary, Milwaukee, Wis. He took an important part in the development of the Catholic church influence in Kansas, having been the first resident pastor of that church at Fort Scott (1865-68). He was transferred to Lawrence, Kans., in 1868, was pastor at Leavenworth in 1876-82, and rector of the cathedral there in 1882-98, when he was consecrated Bishop of Concordia, Kans.

CUNNINGHAM, PETER (1816-69). A British author, born in London, the son of the writer Allan Cunningham. He is best known by his *Hand-Book of London* (1849). He also edited a number of the English classics, wrote *Life of Drummond of Hawthornden* (1833), *Poems upon Several Occasions* (1841), *Life of Inigo Jones* (1848), *The Story of Nell Gwynne* (1852), and was a contributor to English periodicals.

CUNNINGHAM, RICHARD (1793-1835). A Scottish botanist, a brother of Allan Cunningham, the poet. He was born at Wimbledon. From 1808 to 1814 he worked on the *Hortus Kew-*

ensis at Kensington: from 1814 to 1832 he acted as assistant to the King's gardener at Kew, and in the latter year was made Colonial Botanist and superintendent of the gardens at Sydney, Australia. After spending nearly a year in New Zealand, he returned to Australia in 1834, and in the following year, while out with an exploring party on the banks of the Darling River, he was murdered by the natives. He wrote *Two Years in New South Wales* (London, 1827).

CUNNINGHAM, WILLIAM (1805-61). A Scottish theologian. He was born at Hamilton, Lanarkshire, and was educated at Edinburgh University. In 1834 he was appointed pastor of Trinity College Church, Edinburgh, and in 1843 became professor of theology in, and in 1847 principal of, New College. He was a leader in the Free Church movement and in founding the Evangelical Alliance and was a controversialist of exceptional ability. He was moderator of the General Assembly of 1859. Among his principal works are the following: *Historical Theology* (1862); *The Reformers and the Theology of the Reformation* (1862); *Discussions on Church Principles* (1863). Consult Rany and Mackenzie, *Life of Cunningham* (1871).

CUNNINGHAM COAL CLAIM. See ALASKA, *History*.

CUNOBELINUS. See CYMBELINE.

CUOCO, kū-ō'kō, VINCENTO (1770-1823). An Italian historian, born near Naples. He practiced law for a time at Naples, but was banished for participation in the revolutionary movement of 1799, and until his return in 1806 lived chiefly at Milan, where he edited the *Giornale Italiano* and published his *Saggio storico sulla rivoluzione di Napoli* (1800), a vivid narrative of the facts of 1799, viewed with a philosophical and historical criticism so sound as to make of Cuoco one of the greatest modern historians. From 1806 to 1816 he was director of the Treasury and a member of the Court of Cassation at Naples. The best edition of the *Saggio* is by Nicolini (Bari, 1913); best biography by Romano (Isernia, 1904). For Cuoco's philosophical ideas, where he was a follower of Vico, consult articles by Gentile in *Critica* (Bari, 1905, etc.).

CUP (AS. *cuppe*, Icel. *kopp*, OHG. *choph*, cup, from Lat. *cupa*, cask, OChurch Slav. *kupa*, cup, GK. κύπελλον, *kypēlōn*, hollow, Skt. *kupa*, well), DIVINATION BY. A mode of foretelling events practiced by the ancient Egyptians and still prevailing in some of the rural districts of England and Scotland. One of the Eastern methods consisted in throwing small pieces of gold or silver leaf into a cup of water, in which were placed also precious stones with certain characters engraved upon them. The infernal powers were then invoked, and returned answer either in an intelligible voice, by signs on the surface of the water, or by a representation in the cup of the person inquired about. By the modern method a person's fortune is foretold by the disposition of the sediment in his teacup after pouring out the last of the liquid. See DIVINATION.

CUPAR, koo'pär, or **CUPAR FIFE.** A royal and municipal burgh, the county town of Fifeshire, Scotland, on the Eden, 32½ miles north of Edinburgh (Map: Scotland, E 3). It has several schools and a public library. The chief manufactures are linens, brick, leather, flour, building stone, printing, and earthenware. Coal is mined near by. A fortress of the Macduffs, thanes of Fife, once stood on a mound called the Castle Hill, at the east end of the town. Pop.

(royal, parliamentary, and municipal burgh), 1901, 4511; 1911, 4380.

CUP'EL AND CUP'ELLA'TION. See AS-SAYING; LEAD.

CUPID (Lat. *cupido*, desire, from *cupere*, to desire). In classic mythology, the god of love; called in Greek *Ἔρως*, *Erōs*, and by writers in Latin *Amor*, love. Eros was worshiped at Thespie and Leuctra in Bœotia, and Parion on the Hellespont, as a very ancient god of productivity. He also appears in the poets from the time of Hesiod as a mighty god, the personification of the power of love, which unites the gods and produces all things. In this aspect he is called offspring of Chaos, or of Heaven and Earth; in fact any symbolical genealogy is assigned to him which pleased the fancy of a poet or a philosopher. The prevailing later conception, however, is that Eros is the son and inseparable companion of Aphrodite, though there is considerable confusion as to his father. In the earlier Greek art Eros is a winged youth, holding a flower or very commonly a lyre, or a burning torch, and sometimes a whip, as symbol of his power. The bow and arrows, which were his common attributes in Hellenistic and Roman times, seem to have been introduced in the fourth century B.C., when Praxiteles and Lysippus represented the god in famous statues. The statue of Eros stretching the bow, probably influenced by Lysippus, which is now in the Capitoline Museum at Rome, shows the passage to the type which afterward became universal—the chubby, mischievous boy. The later Alexandrian and Roman literature, with its frequent mention of the love gods, finds a reflection in the contemporary art. The artists of the time are exceedingly fond of genre scenes, in which the actors are Cupids, who appear hunting, driving chariots, making wine, selling their wares, or even playing like children. For such scenes cf. the famous "Cupid Frescoes" at Pompeii; consult Mau-Kelsey, *Pompeii: Its Life and Art*, pp. 331-338 (New York, 1902).

CUPID, THE LETTER OF. A poem by Oeeleve, which was attributed to Chaucer in the edition of 1532, though bearing a date (1402) two years after the latter's death.

CUPID AND PSYCHE, sī'kē. 1. One of the tales narrated in the *Golden Ass* of Apuleius (q.v.). Psyche, a princess, by her beauty incurs the wrath of Venus, who sends Cupid to punish her; but he falls in love with his prospective victim and visits her, cloaked in invisibility. He commands her not to attempt to see him. Curiosity leads her to disobey, and the lovers are separated. The pity of Jupiter, however, finally unites them for eternity. 2. A graceful antique marble in the Capitoline Museum at Rome, a copy of a Greek original. Cupid, undraped, embraces Psyche, who is draped from the hips. The statue was found on the Aventine. See PSYCHE.

CUPID'S REVENGE. The title of an inferior comedy by Beaumont and Fletcher, showing strong resemblance to Sidney's *Arcadia*.

CUP'OLA (It., dome, from Lat. *cupula*, *cupule*, little cup, *cupola*, dim. of Lat. *cupa*, cask). 1. A spherical vault or ceiling, so called from its resemblance to an inverted cup. The term may be used either of the interior or of the exterior structure, and is thus not to be sharply distinguished from the word "dome" (q.v.). It is, however, more commonly applied to the smaller forms of dome and to those which are

not conspicuous externally. When the outer roof differs materially in form from the inner dome, it is proper to call the latter a cupola, though not the former; as in the Baptistery at Florence or that at Ravenna. The minor domes of Turkish mosques, the domical vaults over the Mihrab at Córdoba, over the side aisles or even over the nave and choir of St. Paul's at London, are cupolas, but the term is hardly applicable to great external domes or lofty domes like those of St. Peter's at Rome or of the Capitol at Washington. The inner vaults of these domes may, however, be called "cupolas." In popular language the term is often misapplied to a small lookout or lantern crowning a roof, without regard to its form. 2. A circular furnace used in iron founding. See FOC'DRY.

CUPPING. The application of cups, from which the air has been exhausted, to the skin, with the object of causing congestion or excessive fullness of the cutaneous blood vessels; and if it should be thought desirable to withdraw some blood, the skin may be cut or scarified, and the exhausted cups applied over the incisions, to favor its flow. The two procedures are respectively called "dry" and "wet" cupping. Cups are made of glass, with round mouths, from 2 inches to 1 inch wide. The cup is held near the skin, and the flame of an alcohol lamp is thrust into it till part of the air is driven out by expansion. The flame is then withdrawn, and the cup is quickly inverted on the skin, to which it adheres on account of the partial vacuum formed on cooling. The "French cup" is provided with a rubber bulb connected with its interior. The bulb is grasped as the cup is applied, driving out the air, and when the cup is in position the bulb is allowed to expand and fill, thus exhausting part of the air in the cup. Wet cupping should be done under antiseptic precautions. A series of vacuum cups ingeniously devised to fit every part of the body, and provided with suction bulbs, have been invented in connection with the system of treatment advocated by Bier.

CUPRES/SUS. See CYPRESS.

CUPRITE (from Lat. *cuprum*, copper). A red cuprous oxide that crystallizes in the isometric system and has an adamantine or submetallic lustre. It sometimes occurs in long thin needles (*chalcotrichite*), as well as in earthy varieties red, reddish brown, or black in color. Cuprite results from the oxidation of the sulphides of copper and is found associated with other copper minerals and with limonite. It occurs in Thuringia and Tuscany, in England, in Chile, Peru, and Bolivia; and with various copper ores in the Lake Superior region, Missouri, and Arizona. It is found occasionally as a furnace product. Cuprite is a useful ore of copper.

CUPULE (Neo-Lat. *cupula*, dim. of Lat. *cupa*, cask). A word with at least two distinct applications among plants. Among seed plants it refers to a peculiar involucre of coalesced bracts, such as the acorn "cup," and the husk of beechnuts, hazelnuts, etc. Among liverworts (as *Marchantia*) it refers to a cuplike structure that appears on the plant body and contains the peculiar reproductive bodies called "gemmae." See HEPATICE.

CUPULIFERE (Neo-Lat. nom. pl. from *cupula*, cupule, little cup, *cupula* + Lat. *ferre*, to bear). An old name applied to the family in which the oak was the most conspicuous representative. This old family has now been divided into two: Betulaceæ (birch family), and Faga-

ceæ (beech family). To the former family hazelnuts, birches, and alders belong; while to the latter family beeches, chestnuts, and oaks belong. A conspicuous difference between the two families is that in the Betulaceæ both staminate and pistillate flowers are in catkins or catkin-like heads, while in the Fagaceæ this is true only of the staminate flowers. These two families, along with the willow family and walnut family, constitute the amentiferous groups—a name referring to the characteristic catkins or aments. In all of them the stamens and pistils are in separate flowers, so that the plants are either monoecious or dioecious. In none of them is there any corolla, except occasionally some minute petals in the walnuts. In all of them except the willows the fruit is a characteristic nut.

The Betulaceæ contain six genera with about 75 species, while the Fagaceæ contain five genera with about 375 species, the large majority of which belong to the genus *Quercus* (oak). In both families the leaves are alternate, simple, and straight-veined. The characteristic nuts of oaks, beeches, and chestnuts are well known. These two families contain some of our most important forest trees and are mostly natives of the Northern Hemisphere.

CURA, *kūr'ā*, or **CIUDAD DE CURA**, *syōō-nā' dā kūr'ā*. A city of Venezuela, formerly capital of the State of Miranda, situated near Lake Valencia, 1600 feet above sea level (Map: Venezuela, D 1). Owing to its position near the llanos of the Guárico, it has considerable trade as the centre of a cotton-growing, agricultural, and stock-raising region. Cura, founded in 1730, suffered considerably in the War of Independence. In 1900 it was visited by a destructive earthquake. Pop., about 12,000.

CURACANEAN, *kūr'ā-ka-nā'kàn*. A minor linguistic stock of South American Indians in the lower Bolivian region. Rivet sees reason, however, to make it a dialect of the Otúquan or Otúké.

CURAÇAO, *kūr'ā-sā'ō* or *kūr'ā-sō'.* An island of the Dutch West Indies, lying in the southern part of the Caribbean Sea (Map: West Indies, E 4). It is situated about 41 miles north of Venezuela, in lat. 12° N. and long. 69° W., and covers an area of 212 square miles. Its surface is generally flat, except for the hills in the southwest, whose highest elevation is 1200 feet. Streams are few, and the rainfall light. Sugar, tobacco, corn, and fruits are raised, but a considerable part of the island is arid and uncultivable. The principal minerals worked are salt and phosphate. Curaçao liqueur takes its name from the island. The commerce of Curaçao is chiefly with the adjacent islands and the United States. The imports of the colony in 1911 were valued at 4,325,000 guilders; of the island for 1910 at 3,162,310 guilders (coal, divi-divi, cigars and cigarettes, sugar, coffee, cheese, tobacco, rum, etc.). The exports of the colony in 1911 were 1,952,000 guilders and in 1900 1,716,886 guilders (Curaçao, 925,385; Bonaire, 164,363; Aruba, 542,260; St. Martin, 59,926; St. Eustatius, 13,823; Saba, 11,120). (Guilder = \$4.02.) The island of Curaçao, together with the adjacent Dutch islands of Bonaire, Aruba, a part of St. Martin, St. Eustatius, and Saba, form a separate colony (area, 436 square miles) officially called Curaçao, administered by a governor, assisted by a council of four members and a colonial council of eight members. The

smaller islands are administered by subordinate officials. The members of both councils, as well as the minor officials, are nominated by the sovereign. Pop. of the colony, Dec. 31, 1910, 54,469 (of the island of Curaçao, 32,585); 1900, 52,109 (30,636), Aruba, 9357, Bonaire, 6383. The capital of the colony of Curaçao is Willemstad, in Curaçao, a well-built town with a good harbor. Curaçao was occupied by the Spanish in 1527 and fell into the hands of the Dutch in 1634. It was ruled by the English for eight years (1807-15), then returned to the Dutch. There is a United States consul on the island.

CURAÇAO, kūr'ā-sō' (so called from the peel of the Curaçao orange). A well-known and palatable liqueur, made from orange peel by digesting in sweetened spirits, with certain spices, as cinnamon, mace, or cloves. See LIQUEURS.

CURANA (kūr-rā'nā) **WOOD**. See PROTIUM.

CURARI, kūr-rā'rē (South American), CURARE, OURARI, URARI, WOORALI, or WOORABA. A celebrated poison used by some tribes of South American Indians for poisoning their arrows. Its active principle is *curarine* ($C_{10}H_{19}N$), a yellowish-brown, intensely bitter powder. It is by means of this poison that the small arrows shot from the blowpipe become so deadly. The nature and source of this poison remained long unknown, the Indians being very unwilling to reveal the secret, which seems, however, to have been at last obtained from them by Sir Robert Schomburgk, and it is now regarded as pretty certain that the principal ingredient is the juice of the *Strychnos toxifera*, a tree or shrub of the same genus with that which yields nuxvomica (See STRYCHNOS.) It has a climbing stem, thickly covered with long, spreading, reddish hairs, rough, ovate, pointed leaves, and large, round fruit. The poison, when introduced into the blood, acts on the end plates of the muscles, peripheral end organs of the motor nerves, causing complete paralysis without affecting consciousness, sensation, circulation, or respiration except indirectly. Convulsions are due to the asphyxia which results from paralysis of the muscles concerned in respiration. Death finally occurs from this respiratory paralysis. Curari is supposed to be the most powerful sedative known. Artificial respiration is the most efficacious means of preventing its effects. It has been proposed to employ it in the cure of lockjaw and hydrophobia, but it merely stops the convulsions and is itself very dangerous on account of the liability to paralysis of the respiratory muscles. It has been used with success in tetanus.

CURARINE. See ALKALOIDS.

CURAS/SOW (from *Curaçao*, an island in the Caribbean Sea) or properly CURACAO BIRD. A large gallinaceous bird of the genus *Craz* of the family Crecidae, having a strong bill surrounded at the base with a skin—sometimes brightly colored—in which the nostrils are pierced, and the head adorned with a crest of feathers curled forward. They are natives of the forests of the warm parts of America. Their habits greatly resemble those of domestic poultry. They make large, clumsy nests in trees and lay white eggs. They are easily domesticated. The best-known species, the Curaçao bird (*Craz alector*), is about the size of a turkey; its plumage is almost entirely black. It is abundant in the forests of Guiana. Its flesh is very good eating. It is kept in poultry yards in South America, and was introduced

into Holland at the close of the last century, where it seemed completely acclimated, but the stock has never become widespread. Consult Dixon, *The Dovecote and the Aviary* (London, 1853), and Sclater's illustrated papers in the *Transactions of the Zoological Society of London*, vol. ix (London, 1877). Cf. CHACHATACA; GUAN; and HOCO; and see Plate of GROUSE, etc.

CUR'ATE (ML. *curatus*, from Lat. *cura*, cure, care). One who has the cure of souls. In this sense it is used in the phrase of the English prayer book, "all bishops and curates," and similarly in France the word *curé* denotes the parish priest. In England and America the word is applied, in Catholic and Church of England usage, to assistant clergymen. A few incumbents in England hold what are called "perpetual curacies" and are practically the same as vicarages. See VICAR.

CURAVECAN, kūr'ā-vā'kän. A minor linguistic stock of South American Indians, formerly resident in the forested region of eastern Bolivia. Rivet thinks it may belong to the Otupian or Otuké stock and thus lose its independent character.

CURB (from OF. *courber*, *corber*, *curber*, Fr. *courber*, It. *curvare*, from Lat. *curvare*, to bend, from *curvus*, curved, OChurch Slav. *krivŭ*, Lith. *kreivas*, crooked). A bulging or thickening of the ligaments and other tissues of the back part of the hock of horses, following a sprain. Swelling appears on the inner and back part of the joint, generally causing lameness, which is most apparent in trotting and in slight cases usually wears off after the animal has been out for 10 minutes. It may be most readily detected by standing at one side and looking across the joint. Applications of cold, as intermittent or constant irrigation, or an ice poultice, must first be used to allay the irritation and inflammation. When the swelling has assumed defined boundaries, efforts should be directed towards effecting its absorption and reducing its dimensions by means of pressure, blisters of cantharides, and frictions with ointments of bin-iodine of mercury. All work should be suspended.

CUREINA, kūr-bē'nā. See DRUM, OR DRUM-FISH.

CURCI, kūr'ché, CARLO MARIA (1809-91). An Italian priest and author, born in Naples. He was a Jesuit and founded in 1850 *Civiltà Cattolica*, a journal which stood for the rehabilitation of the temporal power of the Pope. But Curci later retracted these opinions and in 1877 published, in *Il moderno dissidio tra la chiesa e l'Italia* (1877), the reasons for his opposition to the policy of Pius IX. This forced him to leave the Society of Jesus, but afterward Leo XIII induced him to recant to some extent, and he continued more favorable to the policy of the Vatican until the publication of his books, *La nuova Italia* (1880), *Il Vaticano regio* (1883), and *Lo scandalo del Vaticano regio* (1884), which were immediately placed upon the Index. Towards the end of his life Curci retracted again and died in the communion of the Church. Consult his *Memorie* (Florence, 1891), extending to 1849.

CURCU/LION/IDÆ (Neo-Lat. nom. pl., from Lat. *curculio*, *gurgulio*, weevil). A large family of rhynchophorous beetles; snout beetles. See WEEVIL: PLUM INSECTS.

CUR'CUMA (It., Fr. *curcuma*, from Ar.

kurkum, saffron). A genus of plants of the family Zingiberaceæ, having the tube of the corolla gradually enlarged upward and the limb two-lipped, each lip three-parted. The species are stemless plants, with tuberous roots, natives of the East Indies. The dried roots of *Curcuma zedoaria* are the zedoary (q.v.) of the shops; the roots of *Curcuma longa* yield turmeric (q.v.); and *Curcuma angustifolia* yields a kind of arrowroot (q.v.). The same species often yields both arrowroot and turmeric—the former being obtained from the young roots, the latter from the old. *Curcuma amada* is called "mango ginger." Its root in its qualities resembles ginger. It is a native of Bengal.

CURD. See CHEESE.

CURÉ DE MEUDON, ku'râ' de mē'dōn', LE (Fr., the curate of Meudon). The name frequently given to Rabelais, whose last charge was at Meudon.

CURE FOR A CUCKOLD. The title of a play by Webster and Rowley (1661), also attributed to Middleton and Rowley.

CUREL, ku'rēL, FRANÇOIS DE (1854-). A French dramatist, born at Metz. He studied engineering, but gave himself to the stage and, although he gained no great popularity, made his mark at the Théâtre Libre and the Théâtre Antoine with the critics by his boldness of theme and his originality, treating such serious topics as labor and capital, the genesis of religion, and the modern idolatry of science, and showing the influence of Ibsen. His plays include: *L'Envers d'une sainte* (1892); *L'Invité* (1893); *Le repos du bon* (1897); *La nouvelle idole* (1899); *Fille sauvage* (1902); *Le coup d'aile* (1906). He wrote two novels, *L'Été des fruits secs* (1885) and *Le sauvetage du grand duc* (1889).

CURES, kūr'ez (from Sabine *curis*, *quins*, spear). A town of the Sabines, about 25 miles from Rome, near the Tiber, the birthplace of Titus Tatius (see ROMULUS), and of Numa (q.v.). The town was destroyed by the Lombards near the close of the sixth century. It stood not far from the modern Corresi.

CURETES, kō-rē'tez (Lat., from Gk. Κουρῆτες, *Kourētes*). Cretan demigods who protected the infant Zeus from his father Cronus (see SATURN), by drowning his cries with the clanking of their brazen weapons. The Curetes were closely connected with the worship of Cybele (q.v.). (See CORYBANTES.) The priests of the Curetes, clad in armor, danced the Pyrrhic dance (q.v.). On the Corybantes and the Curetes both, consult an article by Kaibel in *Göttinger Nachrichten*, pp 512-514 (1901), and Farnell *The Cults of the Greek States*, vol. v (Oxford, 1909).

CURETON, kūr'ton, WILLIAM (1808-64). An English Syriac scholar. He was born at Westbury, became canon of Westminster and rector of St Margaret's, London, in 1849. He died in London, June 17, 1864. His fame rests upon his Syriac studies, which include: *Corpus Ignatianum* (1849); *Four Gospels in Syriac* (1858); *Ancient Syriac Documents Relative to the Earliest Establishment of Christianity in Edessa and the Neighboring Countries* (1864).

CUBETU, kōō-rā-tōō'. A tribe of Betovan stock occupying the country on the Yapurá above the mouth of the Apaporis. They are a subtribe of the Yupua.

CURFEW (OF. *courfey*, *corfey*, from *cuevre*—

feu, *cocrefeu*, *correfeu*, *courrefeu*, cover fire, from *corrir*, Fr. *courir*, to cover + *feu*, fire). In the Middle Ages, the ringing of a bell as a signal for the fires to be covered up for the night and consequently for the people to go to bed. The custom existed in many countries and was very necessary as a police measure, because the fires were built in the centre of the room and there were no chimneys; the wooden houses caught fire easily, and destructive conflagrations were frequent. Polydore Vergil attributes to William the Conqueror the introduction of the curfew bell into England, but the custom prevailed throughout Europe long before his time. There was so much opposition to the ordinance in England that Henry I modified it. The curfew is mentioned in English laws for more than a century afterward, but Blackstone says it refers to the time of night and not to the ordinance. In parts of the United States and England the curfew bell is now rung; in some towns of the former it is a police regulation to warn children off the streets.

CURIA (Lat. *court*). In Roman history, the name of a division of a tribe, dating traditionally from the constitution of Romulus. The tribes being three and the divisions in each tribe 10, there were 30 curie. From the *curia* plebeians were at first excluded; later, plebeians were admitted to them. The assembly of the *curia* was called *Comitia curiata*. The *curia* were at bottom, probably, territorial divisions, including groups of related families. They had political functions, discussed under COMITIA, and religious functions of various sorts. The meeting place of a curia was itself called "curia." Hence curia is also the name given to the Senate house in ancient Rome. Consult Botsford, *The Roman Assemblies* (New York, 1909).

CURIA MURIA (kūr'ri-á mūr'ri-á) ISLANDS. See KIRIA MURIA ISLANDS.

CURIA REGIS (Lat.), or KING'S COURT. The ancient supreme court of judicature of England, known also as the *Aula Regia*, or Royal Hall (of Justice). It was instituted by William the Conqueror as the instrument of his judicial and administrative authority as supreme head of the state, and, exercising, as it did, a general and practically unlimited jurisdiction, it rapidly drew to itself all the important litigation of the kingdom. There had been no analogous tribunal under the Saxon kings, the popular county courts being in all ordinary cases supreme within their respective counties (shires), and a centralized administration of justice being foreign to the sentiments and traditions of the English people. Among the Normans, however, it was the duke or king, and not the people, from whom the stream of justice flowed, and the followers of the Conqueror could hardly be expected to subject their causes—their controversies over land titles, their exactions, their claims to tithes and preferments—to the judgment of the popular tribunals. It was in the County Court of the County of Kent, however, that a great case, involving the title to 25 manors, between the Archbishop of Canterbury and Odo, the Bishop of Bayeux and Earl of Kent, the half-brother of the King, was tried and adjudged in the tenth year of the Conqueror, and cases of this kind were not uncommon in the earlier years of William's reign.

But the older tribunals could not long com-

pete with the immediate jurisdiction of the King, at first administered by him in person, and then by the chief justiciar, an officer of almost royal authority and importance. All important causes, public and private, whether civil, criminal, or ecclesiastical, might be brought before the King's Court in the first instance, and judgments of the county courts and other local tribunals were subject to be appealed and brought before it for review. Its learning and disinterestedness contributed as much as its authority to invest it with the function of the principal court in the kingdom for the adjudication of private controversies, and the position of the justiciar, as the chief executive and military officer, as well as the highest judicial officer in the kingdom, added to the weight of its judgments.

The *Curia Regis* early became a peripatetic or circuit court, attending the King, or, in his absence from the realm, the justiciar, in his frequent progresses through the kingdom, and this, in the course of time, became a great abuse, amounting in many cases to a denial of justice. To remedy this, it was provided in *Magna Carta* (1215) that common pleas, i.e., causes between private parties, should not follow the court, but be heard in a fixed place. The establishment, thereupon, of a distinct Court of Common Pleas, in the reign of Henry III, to sit permanently at Westminster, was the beginning of the dissolution of the *Curia Regis*. A separate division of the court, known as the King's Court of the Exchequer, had previously been created for determining questions relating to the royal revenues. When in the same reign a Chancellor of the Exchequer was appointed as the permanent head of this department, it also became a separate and distinct tribunal. Finally, in the fifty-second year of Henry III (1268), a third court, thenceforth known as the Court of King's Bench, was created and took over the remaining jurisdiction of the *Curia Regis*. Thus, the latter, though never formally abolished, lost its importance and became obsolete, after 200 years of greatness. The last justiciar of the King's Court, Robert de Brus, became the first Chief Justice of the King's Bench in 1268, and with him the line of great justiciars became extinct. From that time to the reform of the judicial system of Great Britain in 1873-75, England lacked a single supreme court, but the model of the *Curia Regis* of the Norman kings was followed in the creation of the Supreme Court of Judicature, by which justice is administered in England to-day. See COURT; SUPREME COURT.

Consult: Thorpe, *The Ancient Laws and Institutes of England* (London, 1840); Stubbs, *Constitutional History of England* (Oxford, 1883); Stephens, *History of the Criminal Law* (London, 1883); *Essays in Anglo-Saxon Law* (Boston, 1876); Dugdale, *Origines Juridicales; or, Historical Memorials of the English Laws, etc.* (London, 1686); Inderwick, *The King's Peace, A Historical Sketch of English Law Courts* (ib., 1895); Pollock and Maitland, *History of English Law* (2d ed., Cambridge and Boston, 1899); Holdsworth, *History of English Law* (London, 1910); Jenks, *A Short History of English Law* (ib., 1912).

CURIA ROMANA. See ROMAN CATHOLIC.

CURIATII, kŭ'ri-m'shi-l. The name of three Alban brothers, the opponents and victims of the three Horatii (q.v.) in the famous con-

test by which Alba Longa became subject to Rome.

CURICANCHA, kŭŕrĕ-kān'chā (Quichua, court of gold). A temple of the sun said to have been founded by Manco Capac, in Cuzco, Peru, and to have been first used as a palace by the early Incas.

CURICÓ, kŭŕrĕ-kŏ'. The capital of the Province of Curicó, Chile (Map: Chile, C 10), situated, at an elevation of 748 feet above sea level, 114 miles south of Santiago. It is connected with Santiago by railroad and has considerable trade with Argentina through the Planchón Pass. Curicó was settled in 1743, though not on its present site. Pop., 1907, 17,573; 1910, 18,313. Pop. of the province, 1910, 108,120.

CURIE, kŭ'rĕ', MARIE SKŁODOWSKA (1867-). A Polish-French physicist and chemist, the wife of Pierre Curie (q.v.). She was born in Warsaw, where her father was professor of physics in the University. She studied the physical sciences at Warsaw and later in Paris with Curie, whom she married in 1895. To the researches on radioactive substances and radioactivity which have made her name and that of her husband famous, she contributed at least an equal share. It was she who carried out the tedious and innumerable fractional crystallizations that finally yielded a minute sample of pure radium salt, enabling her to determine the precise atomic weight of radium. The honors and prizes for the discovery of the radioactive elements (see POLONIUM, RADIUM, RADIOACTIVITY) were awarded jointly to her and her husband, including part of the Nobel prize for physics in 1903. On her husband's death, in 1906, she succeeded him as professor of physics and director of the physical laboratory at the Sorbonne, where she continued her researches. Later she became professor also in the *École Normale Supérieure des jeunes filles* at Sèvres. In 1910 she was awarded the Albert medal of the Royal Society of Arts (England), and in 1911 she received the Nobel prize for chemistry. She wrote *Recherches sur les propriétés magnétiques des aciers trempés* and *Recherches sur les substances radioactives* (Eng. trans., 2d ed., New York, 1904).

CURIE, PIERRE (1859-1906). A French physicist. He was born in Paris. He received his general education in Paris and early engaged in independent research, which resulted in a number of valuable contributions to physical science. In 1895 he was made professor of physics at the *École municipale de chimie et de physique*. In 1896 he and his wife (see CURIE, MARIE SKŁODOWSKA) began to study the Becquerel rays, which led them to the discovery of polonium (q.v.) and subsequently of radium (q.v.). In 1901 they received the La Caze prize of the Academy of Science and two years afterward the Davy medal of the Royal Society of London, and part of the Nobel prize. In 1904 Curie was made professor of physics at the Sorbonne and in 1905 a member of the Institute of France. He was run over and instantly killed in Paris by a wagon, April, 1906. His memoirs were published mostly in the *Comptes rendus* of the French Academy. See RADIOACTIVITY.

CURIŌ (clipped from *curiosity*). A term still popularly used, though somewhat obsolete, to describe any kind of object of curiosity, especially such as would belong to cabinet (q.v.) collections, on account of antiquity, rarity, or intrinsic interest, in such domains as pottery,

porcelain, enamels, metal work, ivories, wood carvings, arms, clocks, fans, watches, snuff-boxes, musical instruments, and the like.

CURIO, GAIVS SCRIBONIVS. 1. A Roman statesman and orator, tribune of the people in 90 a.c. He served under Sulla in Greece against Archelaus (see *ARCHELAUS*, 4) and in Asia. He was consul in 76. As Governor of Macedonia, he defeated the Thracians and the European Dardanians, making his way even to the Danube; for this a triumph was granted to him. He was a friend of Cicero, but a bitter opponent of Cæsar, against whom he wrote a political pamphlet in dialogue form. As an orator, he was known for his brilliant style and his pure Latin. He died in 53. 2. Son of the preceding, best known in connection with the events leading to the outbreak of war between Cæsar and Pompeius. At first he supported Pompeius; later, he went over to Cæsar, persuaded, it was said, by a large bribe. When it was maintained that Cæsar, then in Gaul, in order to be free to stand for office in Rome, should follow the usual procedure and lay down his imperium before entering the city, Curio proposed that Pompeius should do the same, and recommended that, if either refused, he should be declared a public enemy. The proposal was carried, but the consuls nevertheless directed Pompeius to command all troops in Italy. Finding his opposition to this unsuccessful, Curio fled to Cæsar. He served with success in Sicily in the interest of Cæsar and then crossed to Africa and was defeated and slain there by King Juba.

CURIOSITIES OF LITERATURE. A work in six volumes by Isaac D'Israeli, which appeared, without indication of its authorship, at intervals from 1791 to 1824.

CURISCHES HAFF, koo'rish-es häf. See *KURISCHES HAFF*.

CURITIBA, koo'ra-tõ'ba. The capital of the State of Paraná, Brazil (Map: Argentina, K 3), situated on the Iguazú River, in a fertile plain, 3200 feet above sea level. It is well built and has a high school and a street railway. Railroads run to the interior and to the coast, and the town exports corn, beef, fruit, tobacco, and Paraguay tea. There are gold mines in the vicinity. Curitiba was settled in 1654, and since 1831 has been the capital of the state. Pop., 1890, 22,694, 1912 (est.), 60,000.

CURLEW, ARENDT VAN. See *VAN CORLEAR*.

CURLEW (OF, *corlew*, It. *chiurlo*; probably onomatopoeitic in origin) A shore bird of the genus *Numenius*, and snipe family, characterized especially by its long, slender, downward-curving bill, and its liking for upland plains



BILL OF ESKIMO CURLEW.

rather than marshy places. In America are the Hudsonian or Jack curlew (*Numenius hudsonicus*), the Eskimo curlew, or doe-bird (*Numenius borealis*), and the long-billed curlew (*Numenius americanus*, or *longirostris*). The first two are found in summer in far Arctic regions and in winter as far south as Pata-

gonia, so that during some part of the year they occur in most portions of the Western Hemisphere. The long-billed, whose beak is sometimes 8 inches long, belongs in the eastern and central United States, especially at the South, and on the Northwestern prairies. Its nest, like that of other curlews, is on the ground and slightly constructed, and the eggs are clay-colored, with various brown markings.

The common curlew of Great Britain (*Numenius argutus*), the "whaup" of the Scotch, has an almost world-wide distribution in the Old World, migrating even to New Zealand. Its flesh and eggs are both eaten. Other Old World species are the whimbrel (*Numenius phaeopus*) and the Otahtu curlew (*Numenius fastensis*) of the Pacific islands. Consult: Coues, *Birds of the Northwest* (Washington, 1874); Selous, *Bird Watching* (London, 1901); Bent, "The Hudsonian Curlew," *Educational Leaflet No. 62, National Association of Audubon Societies* (New York, 1913); Hornaday, *Our Vanishing Wild Life* (ib., 1913). See Plate of BUSTARDS.

CURLING (so called from the twisting motion of the curling stones). A game of Scot-

tish origin. Associated with the parent body to-day, the Royal Curling Club of Scotland, are clubs in England, Ireland, Canada, Newfoundland, New Zealand, Nova Scotia, the United States, Russia, and Switzerland. The first club to be organized in the United States was the Orchard Lake Club, near Pontiac, Mich., in 1842. The Grand National Curling Club was organized in 1867.

There are two curling games—the rink play and "playing for points." The rink game is played on any piece of ice, upon which may be plotted out a rink 42 yards long (occasionally 32 yards) and 10 yards wide. There are four players on each side, each using two stones of circular shape, not heavier than 44 pounds nor lighter than 32 pounds (without handles), and not of greater circumference than 36 inches, nor of less height than one-eighth of the greatest diameter. Each player in turn takes his position on the crampet or iron foothold at one end of the rink and propels his stone as near to the tee, 38 yards off, as he can. The next man from the opposite side then projects one of his stones still nearer, if possible, and so the game proceeds until each has cast his two stones, after which the end, or "head," is counted. A stone is of no use unless it reaches the mark called the "hog score," and of no value if it passes out of the parish,

18 inches FOOT	SCORE
BACK	SCORE
SWEEPING	SCORE
HOG	SCORE
LINE	
MIDDLE	LINE
CENTRAL	
HOG	SCORE
BACK	SCORE
FOOT	SCORE
18 inches	SCORE

which is a 7-foot ring drawn round the tee. All the stones that stay within the parish are counted, and that side wins which has the greatest number of stones nearest the tee.

It is permitted during the game for one side to aim at its opponents' stones and to knock them out of the circle if possible. The sweeping of the ice, an important feature of the game, is under the direction of one player of each side called the "skip." The player's party may sweep the ice from the hog score next the player to the tee, but when snow is falling the ice may be swept from tee to tee. In the "point" game there are no sides; each player has two stones to throw, and other stones are placed round the tee for him to make his points by placing his ball, or displacing the other balls from the positions in which they have been placed. Originally the stones were simply rounded stones, taken from the channel of a river; but about the middle of the eighteenth century they were improved by chiseling, and later handles were introduced. Now each stone has usually two sides—one so curved that it runs as on a pivot and highly polished for use on dull ice, and the other less polished, but with a larger concave or hollow, to give it a better catch or hold on keen, clean ice. A set of matches is called a "honspiel." There are international honspiels between the United States and Canada, and interstate matches yearly at Montreal, Winnipeg, Ottawa, Hamilton, Toronto, St. Paul, Minneapolis, Duluth, Chicago, Buffalo, Hoboken, N. J., and several other cities. Numerous trophies are contested for, among which are the International trophy, the Quebec Challenge cup, the Grand Challenge cup of Manitoba, the Caledonian tankard, the Viceroyal tankard, the Merriam trophy, and the Gordon-Mitchell and Smith medals. Consult Ramsay, *An Account of the Game of Curling* (the earliest history of the game, Edinburgh, 1811); Taylor, *Curling, the Ancient Game* (ib., 1877); and the *Official Curling Guide* of "Spalding's Athletic Library" (New York, published annually).

CURLL, EDMUND (1673-1747). An English bookseller, to whom Pope devoted some of the least complimentary lines of the *Dunciad*. He became known for his indecent publications, to describe which the term "Curlicism" was invented. Some of these dubious works got him into trouble, and one cost him an hour in the pillory. Besides his "Curlicisms," he published more than 150 standard works.

CURRACH, COURACH, kūr'ra or kūr'rak, or **COR'ACLE** (Gael. Ir. *curach*, Welsh *corice*, boat). The name given in the British Islands to a canoe or boat made of a slender frame of wood covered with skins. Skiffs of this sort, as well as canoes hollowed out of the trunks of oaks, were in use among the Britons in the earliest times of which we have record. Julius Cæsar, who built some of them after the British model, tells us that the keel and gunwales were of light wood, and the sides of wicker covered with hides. A long voyage in the North Sea, made in a currach during the sixth century, by one of the companions of St. Columba, is commemorated by Adamnan, who died in 704. In 878 three Irish missionaries sailed in a currach from Ireland to Cornwall: the voyage occupied seven days, and the size of the currach is indicated by the remark that it was one of two skins and a half. An old life of St. Patrick speaks of a currach "of one skin, with neither

helm nor oar." The currach of a larger size had a mast and sail. The currach still continues to be used on the Severn, and on many parts of the Irish coast, especially on the shores of Clare and Donegal. The last one known to have been used in Scotland is in the museum at Elgin. See **CORACLE**.

CURRAGH OF KILDARE, kūr'rag or kūr'ra óo kil-dár', THE. A famous race track and the seat of a military camp in County Kildare, Ireland. The plain is about 6 miles long and is the property of the crown, its administration being in the hands of a ranger. The camp was established after the Crimean War and has accommodation for over 12,000 men.

CUR'BAN, CHARLES COURTNEY (1861-). An American figure and landscape painter. He was born at Hartford, Ky., and studied in New York at the Art Students' League, and in Paris under Doucet, Lefèvre, and Benjamin-Constant. He received the Hallgarten, Shaw, and Carnegie prizes in the National Academy, the Coreoran prize, Washington, and medals at the expositions of Paris (1900), Buffalo (1901), and St. Louis (1904). He was elected to the National Academy of Design in 1904. There are pictures by him at Vassar College, in the National Gallery, Washington ("Perfume of the Roses"), the Pennsylvania Academy ("The Breezy Day"), and in the museums of Columbus, Richmond, Ind., Toledo, and Buffalo. He has a wide range of subjects, but prefers to paint beautiful female nudes in idyllic surroundings. His color is delicate, his draftsmanship sure and minute. Among his more recent paintings are "Wild Asters on the Mountain Side," "Victoria," "Huckleberries and Ferns," "Mountain Laurel," all exhibited in 1912, and "June," "In the Garden," "The Lanterns," exhibited in 1913.

CURRAN, JOHN PHILPOT (1750-1817). An Irish judge and orator. He was born at Newmarket, County Cork, July 24, 1750, and educated at Trinity College, Dublin, where he was more dissipated than studious. In 1773 he went to London and studied law assiduously at the Middle Temple. He was called to the Irish bar in 1775 and soon won success by his ability and social qualities. He was an expert cross-examiner and possessed a thorough acquaintance with every intricacy of the cunning native mind. In 1782 he became member for Killebeggan in the Irish Parliament and supported a liberal policy. His sarcasm led him into several fortunately harmless duels. In 1788 he favored the formation of an Irish volunteer army corps and eloquently protested against the English policy which led to the rebellion of 1798. His fearless defense of the leaders at the State trials, and Robert Emmet's affection for his daughter, the heroine of Moore's pathetic poem, led to Curran's examination before the Privy Council (in 1803), but he was found guiltless of complicity. He bitterly opposed the Union, as the "annihilation of Ireland," and its consummation, crowding on domestic trouble, seriously impaired his health. After the death of Pitt, Fox appointed him Master of the Rolls with a seat in the Privy Council. He held the office from 1806 to 1813 and retired on a pension. As a distinguished man among the brilliant men of the period, he spent the last three years of his life in London, where he died, Oct. 14, 1817. His memory is preserved by excellent examples of sparkling wit and repartee.

found in various memoirs. Consult: Phillips, *Recollections of Curran and his Contemporaries* (London, 1850); Curran, *Life of Curran* (ib., 1819; New York, 1855); Stephens, *Memoir* (London, 1817); O'Regan, *Memoir* (ib., 1817); *Curran's Speeches*, with a *Life*, edited by Davis (Dublin, 1855).

CURREANT (Fr. *corinthe*. It. *corintho*, currant, from Lat. *Corinthus*, Gk. *Kórinthos*, *Korinthos*, Corinth, so called as being originally exported from that city). A name used to designate some fruits of the genus *Vitis* as well as both the plant and fruit of the genus *Ribes*. Originally this term seems to have been applied to the small raisins which are now a common commercial article much used in cookery. In general the term "currant" is applied to both the plant and fruit of those species of the genus *Ribes* that have no thorns and bear their fruits in bunches or clusters like grapes. *Ribes rubrum* may be taken as a type. This group is found chiefly in the northern half of the north temperate zone. In Europe it is wild and occurs in England and on the Continent as far north as Kamchatka, although it is not found in the Mediterranean countries. In America it is found in Canada and both eastern and western United States. Having a northern origin, it has proved a most valuable plant in the Northwest, where few cultivated fruits thrive without protection. The currant is found in almost every fruit garden throughout the northern United States and Canada and is cultivated to a considerable extent commercially.

Ribes rubrum, from which our red and white varieties are derived, is the most important member of this group, both in America and Europe. (For illustration, see Plate of CYPRESS.) It grows best on a strong, moist loam, with a northern exposure or partial shade. For this reason it is often planted in orchards and on the north side of buildings. It is generally propagated by hardwood cuttings, 6 to 10 inches long, taken in the early fall. The plants are set about 4 feet apart in rows 6 feet apart. Frequent and shallow cultivation is given, and good results are often secured by mulching. Not much pruning is required. The old wood should be thinned out each year, none over three years old being allowed to remain. Red varieties are the ones chiefly grown for market. The white sorts are sweeter, but not so popular. Both white and red varieties are extensively used in the preparation of jellies and jams and for wine making. Black currants (*Ribes nigrum*) are little grown in the United States, but are extensively cultivated in Canada and in Europe, especially in Scotland. A kind of liquor (*liqueur de cassis*) is made in large quantities from them in France. The raw fruit has an unpleasant odor and flavor, which becomes agreeable only by scalding. It possesses medicinal properties and is used as a tonic and in throat troubles.

Ribes americanum, the Western representative of the black currant, possesses all its good qualities and is more ornamental. Another American species very generally met with in ornamental plantations, under the name of "flowering currant," or "golden currant," is *Ribes aureum*. It has been lately placed upon the market as a fruit plant under the name of "Crandall currant"; its fruit is of good quality, but it is a small bearer. The red-flowered currant (*Ribes sanguineum*), now so common as an

ornamental bush in shrubberies and trained on walls, producing in April a profusion of deep-red flowers in large drooping racemes, is a native of northwestern America and was introduced into Great Britain in 1826. Its bluish-black, mucilaginous, insipid berries are not poisonous, as is popularly believed. Another currant, with beautiful red berries, larger than the largest English red currant, occurs on the Himalayas, at an elevation of 13,000 feet. The name "native currant," or "Australian currant," is given in Australia to the berries of different shrubs, particularly the white berries of *Leucopogon richii*, of the family Epacridaceae. Other fruits bearing the same name are produced by species of *Coprosma* (family Rubiaceae), but they are very inferior.

Currant Diseases—Two diseases of the currant are well known in the United States, and they both occur in Europe and elsewhere. The anthracnose, caused by *Pseudopeziza ribis*, attacks the leaves, causing small black spots on the upper side, and later white areas on the under surface. The leaves turn yellow and fall from the bushes. The leaf spot, due to *Septoria ribis*, occurs as whitish spots with black centres, which spread over the leaf, causing it to fall prematurely, the whole bush being bare by late summer. The mildew, *Sphaerotheca mors-uvæ*, also attacks currants. These diseases can be prevented by the proper use of any standard fungicide. A wilt due to *Dothiorella* sp. causes a sudden wilting and death of the canes. This disease is most common in the Hudson River region in New York.

CURREANT INSECTS. Currants are most injured by the caterpillar-like larvæ, called "currant worms," of two sawflies (q.v.). One, of foreign origin, is *Vermatus ribesii*, and the other, a native, is *Pristiphora grossulariæ*. Both are fully described and treated of by Professor Riley in his *Ninth Report on the Insects of Missouri*, and heliothere is recommended as a remedy. These defoliate the plant. Its stem and roots are attacked by scale insects and by two borers of note. One is the caterpillar of a small wasp-like ageriid moth, or clearwing (*Resia tipuliformis*); the other is a small, black, sparsely spotted, long-horned beetle (*Parnocerus supernotatus*). It lays its eggs on the currant stems early in June, where there are soon hatched tiny grubs that begin to bore into the stem until they reach and feed upon the pith. When full grown (before the close of the season), they are half an inch long, have brown heads, and whitish, pubescent bodies. When about to change to a chrysalis, this larva gnaws a tunnel to, but not quite through, the outer bark, and then pupates in this chamber and sleeps through the winter. As soon as it is revived by the spring it makes its final change, and the beetle gnaws its way out. The way to destroy these beetles is to prune and burn all dead twigs on the bushes early in spring. Compare GOOSEBERRY. See (CLEARWING).

CURREANT WINE. A wine made of the juice of fresh red or white currants, to which sugar is added before it is set aside to ferment. Fermentation requires several weeks, and the wine is not fit for use for at least some months afterward. Black-currant wine is made in the same way from black currants.

CURRELLEY, (CHARLES TRICK (1876-). A Canadian clergyman and archaeologist. He

was born at Exeter, Ontario, was educated privately, and afterward at the Harbord Collegiate Institute, Toronto, and Toronto University. He entered the Methodist ministry in 1899, but went to London, England, in 1902 and was appointed to the staff of the Egyptian Exploration Fund. In 1903 he joined the British School of Archaeology at Athens. In 1902-03, while excavating at Abydos, he discovered the tomb of Admes, "the Pharaoh that knew not Joseph," and also a stone which revealed the parentage of the founders of the eighteenth Egyptian dynasty. In 1903-04 he was in charge of explorations along the Fayoum and in the northern marshes, Egypt. In 1904-05 he led an exploring party to Sinai, and afterward engaged in excavations in Crete, Asia Minor, and Syria. He discovered the statue of Hathor; also the inscription and portrait of Cheops, for which the Khedive of Egypt conferred on him the Order of the Mejidieh. Later he was elected a fellow of the Royal Geographical Society. In 1907 he was appointed curator of the Museum of Archaeology, Toronto University. He published *Sinai*, an account of his explorations.

CURRENCY (ML. *currentia*, current of a stream, from Lat. *currere*, to run). The circulating medium in which debts are paid and the business of the country transacted. This would seem to be also the definition of the term "money," and, indeed, among economic writers there is no hard and fast line to distinguish the use of the respective terms "currency" and "money." In general, however, the term "currency" applies more specifically to those attributes of money which are included under the designation "medium of exchange," as distinguished from those which attach to its function as a standard of value.

While, with few exceptions, the money of civilized states rests upon a metallic basis of gold and silver, the circulating medium is often exceedingly complex. Of this the statement of money in circulation in the United States furnishes an excellent illustration:

MONEY IN CIRCULATION IN THE UNITED STATES, OCT. 1, 1913

Gold coin	\$ 610,735,030
Gold certificates	1,028,828,159
Standard silver dollars	73,284,490
Silver certificates	478,735,722
Subsidiary silver	157,787,867
Treasury notes of 1890	2,802,750
United States notes	339,826,454
National bank notes	709,677,098
Total	\$3,402,477,570

The aggregate of these various forms of money constitutes the currency of the nation; but among them we can recognize one only, viz., gold coin, as possessing all the attributes of money. It is in the relation of these other forms to the standard money that the questions touching the currency arise. While a fuller discussion of these questions must be reserved for other articles, a brief survey can be had in examining the list here given. In it we recognize three types—token currency, government paper currency, and bank currency.

The subsidiary silver and minor coinage of the United States (the latter not given in the table) represent in the fullest sense token currency. The metallic value of the coins is in contemplation of the law less than their nominal

value; their legal-tender quality is limited, as is also their amount, while the government undertakes the obligation to redeem them in standard money. The silver dollars approach token currency in the lack of correspondence between their metallic and nominal values and in the limitation of their quantity, but they depart from its principles in possessing full legal tender and in not being directly redeemable in gold.

Two forms of paper currency appear in the circulation of the United States—the certificates and the legal-tender notes. The certificates, whether gold or silver, represent in another form a definite quantity of money deposited in the United States Treasury. They are not themselves endowed with the legal-tender qualities of the money they represent, though receivable by the government as money. The United States notes convertible into gold on demand are secured not by an equivalent holding of gold by the Treasury, but by a "reserve" of \$150,000,000, which is deemed sufficient to meet all ordinary demands for redemption. Experience has taught that all such obligations due on demand will not be presented simultaneously. The Treasury notes of 1890, popularly known as "Sherman notes," were issued in payment for silver bullion bought between 1890 and 1893. They are full legal tender and are redeemable in gold like the United States notes. They are gradually being retired in exchange for silver certificates based on silver dollars coined from the bullion purchased by the notes when first issued.

Banking currency is represented in our circulation by the national bank notes. These are receivable at par by all national banks and by the government in payment of all dues except customs duties, and are payable for all debts owing by the United States except interest on the public debt and in redemption of United States or Treasury notes, for they rest, not on the credit of the issuing banks, but on government bonds, and their redemption is guaranteed by the government. Viewed in this light, they appear as a form of government paper currency. By Act of Dec. 23, 1913, provision is made for the gradual retirement of the bond-secured banking currency through the conversion of the 2 per cent bonds into 3 per cent bonds without the circulation privilege. A new form of currency, issued through the regional reserve banks, is authorized by the law. This currency is based upon commercial paper deposited with a Federal reserve agent, equal to the notes in face value. As additional security the regional reserve bank is required to hold a reserve of 40 per cent in gold against such notes. The notes are a prior claim on the assets of the bank and are further guaranteed by the government, which redeems them at par at the Treasury. The word "currency" is often used to include such credit instruments as checks and drafts and is usually then designated "deposit currency." Consult: Sumner, *A History of American Currency* (New York, 1878); Bullock, *Lectures on the Monetary History of the United States* (ib., 1900); Hepburn, *History of Coinage and Currency in the United States* (ib., 1903); Academy of Political Science, *The Reform of the Currency* (ib., 1911); Dodd, *History of Money in the British Empire and the United States* (London, 1911). See BANK, BANKING; COINAGE; GREENBACKS; TREASURY NOTE; MONEY.

CURRENT, ELECTRIC. See **ELECTRICITY.**

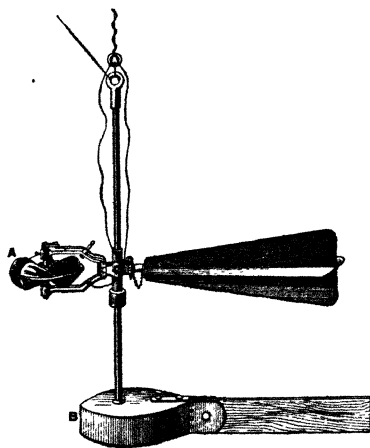
CURRENT METER. An instrument for measuring the velocity of flowing water, as in streams, canals, rivers, etc., consisting of a wheel revolving under the influence of the pressure of the flowing water in connection with an indicating or recording device. Such an apparatus was the float wheel of Borda and Dupuit for measuring velocities at the surface; the first real current meter for use beneath the surface was invented in the year 1790 by Woltmann, the German hydraulic engineer, and later improved by Darcy and others, until finally it reached the present form shown in the sketch.

The current meter used by the United States Geological Survey, which may vary more or less in its detail, consists essentially of a vertical metal rod, to the bottom of which is securely attached a heavy lead weight *B* with a tail which insures the apparatus being maintained in a vertical position and directed upstream. Above the weight and on the rod is the device *A*, consisting of a wheel with cup-shaped vanes and a four-bladed rudder to keep the wheel facing against the current.

The flow of water causes the wheel to revolve, and from the known relation between the number of revolutions and velocity, the velocity of the stream in feet per second may be determined.

By means of an electrical apparatus attached by wires to the spindle these revolutions are recorded as such upon an instrument which may be held either on shore or in the boat from which the work is being done.

To determine the relation between revolutions and the velocity in feet per second, it becomes necessary to rate the meter, and this should be



PRICE CURRENT METER.

done for each meter. This is done by passing the apparatus through a body of still water at uniform speeds varying from 0.2 foot per second to 10 feet per second, and noting the number of revolutions indicated on the dial corresponding to the different speeds. From these observations a rating table is plotted, or a curve, to show the velocity of flow in feet per second corresponding to any number of revolu-

tions. It is found, however, that this relation changes after use, so that it is absolutely essential to rerate the meter at definite periods if accurate results are desired. For this purpose the United States Geological Survey maintains stations at Washington, D. C., Denver, Colo., and Los Angeles, Cal., consisting of a track on which runs a car from which the meter is suspended.

The current meter is perhaps more extensively used and gives more precise results than any other apparatus for determining the velocity of flowing water in streams of average size and under normal conditions.

The object of all measurements of rivers is to determine the quantity of water flowing through a given section in a given time, but, as this depends upon the velocity, it is necessary to measure that. Where the quantity or discharge is small, the more accurate ways of measuring are by orifices or weirs, i.e., up to a discharge of 200 cubic feet per second, but beyond this, either floats or the current meter must be employed. Outside of the first cost the latter is always the more preferable.

The method applied by the current meter in determining the discharge of a stream, which depends upon the mean velocity, is as follows. To get the mean velocity of flow in any vertical, it is assumed that this is represented on the meter by the total number of indicated revolutions divided by the time, when the meter has been uniformly lowered from the surface to the bottom and raised again from the bottom to the surface. Several such readings being taken at various points in a plane at right angles to the axis of the stream, and a mean computed, will give the mean velocity at that section, whose area is computed from soundings. This mean velocity multiplied by the area of the section gives the discharge. By the direction meter invented by Ritchie and Haskell the observer is enabled to determine simultaneously on recording dials the direction and velocity of any current. In addition to the current meter may be mentioned those of Fteley and Ellis. The use of the current meter, as well as its construction, is fully discussed in the following references: Hoyt and Grover, *River Discharge* (2d ed., New York, 1912); Hoyt, "Use and Care of the Current Meter, as Practiced by the United States Geological Survey," *Transactions American Society of Civil Engineers*, vol. lxvi, p. 70. (ib., 1910); Murphy, *Hydrographic Manual United States Geological Survey* (Washington, 1904), and other Water-supply and Irrigation papers of United States Geological Survey.

CURRENT RIVER. A stream less than 250 miles in length, rising among the foothills on the east slope of the Ozark Mountains, in Texas Co., southern Missouri. It flows southeast, then south, crossing into Arkansas, where it joins the Black River in Randolph County (Map: Arkansas, E 1).

CURRENTS. See **OCEAN CURRENTS; TIDES.**

CURRICULUM (Lat. *curriculum*, a running, a course, from *currere*, to run). The term applied to a course of study, or collectively to that of any type of educational institutions, as the college curriculum, the high-school curriculum, the common-school curriculum, etc. The historical basis of the modern educational curriculum is found in the Seven Liberal Arts of the Middle Ages, the development of which from Greek philosophical speculation and edu-

cational practices is traced under the title of **ARTS, SEVEN LIBERAL**. As long as the idea of the symbolical perfection of this organization of studies and of human knowledge prevailed, there was no modification of the form of the curriculum, though the content of these terms was modified from time to time. All lower education was included in the subject of the *trivium*, i.e., grammar, rhetoric, and dialectic, which represented so many approaches to the Latin language. This was based, it is true, on the work of the "singing" school, which furnished to the child the school arts (reading and writing), with a modicum of arithmetic. The curriculum of higher education included the subjects of the *quadrivium*, i.e., arithmetic, geometry (mathematics and geography), astronomy (natural sciences), and music (aesthetic, etc.). The elaboration of the curriculum under the influences of the early universities and of the Renaissance consisted chiefly in the addition of the subjects of medicine and law, both common and civil, and in the change in the content of the subjects of the quadrivium. These changes can be followed in the successive papal rules and university regulations which prescribed the books that should be read in the several subjects. From the time of the Renaissance to the close of the eighteenth century there was no modification in the organization of the educational curriculum and little in the content. From that time, however, the changes have been numerous and radical, and the old idea of the historical and logical perfection of the traditional curriculum has largely disappeared. In the United States, where conditions permitted these changes with less opposition than in the more conservative societies, very extensive changes have occurred, and an almost chaotic condition has ensued. These changes have consisted primarily in the addition of new subjects to each of the stages of the curriculum, due to the great development of knowledge, especially scientific, during the nineteenth century. The curriculum of the elementary school has expanded in content from the three fundamental school arts until it now embraces from 12 to 15 subjects in half that many spheres of intellectual interests, and in time, from three or four years to eight and nine, the secondary curriculum has undergone no expansion in time, perhaps a diminution, owing to the encroachment of both the lower and the higher curricula, but has added so great a number of subjects that it deals in a preliminary way with almost all those included within the curriculum of college and university. This multiplication of subjects, with no corresponding increase in time and with but little improvement in methods of teaching, has made the problem of the curriculum of the secondary school peculiarly difficult, and that part of our educational system is most in need of reform.

The problem of the curriculum in each of its stages is twofold—that of content and that of organization. This twofold problem is now and long has been the chief topic of educational discussions in the United States. It cannot be said that any solution has been offered, but a statement of the case will be found in the article **PEDAGOGY**. (See also **ELECTIVE STUDIES**.) The matter has received extended study by American educators and has formed the subject of two important reports by committees appointed by the National Education Association. The first

of these, issued in 1892, is known as the *Report of the Committee of Ten* and relates chiefly to secondary education; the second, known as the *Report of the Committee of Fifteen*, relates chiefly to the elementary school and was issued in 1895. Consult, also: *Reports of the National Education Association* (Washington, 1895 et seq.); *Proceedings of the National Education Association*; Payne, *Public Elementary School Curriculum* (Boston, 1905); Henderson, *Textbook in the Principles of Education* (New York, 1910); Ruediger, *Principles of Education* (Boston, 1910); Cubberley, *Changing Conceptions of Education* (Boston, 1909).

CURRIE, JAMES (1756-1805). A Scottish physician. He was born at Kirkpatrick Fleming, Dumfriesshire, held a mercantile position at Cabin Point, Va., from 1771 to 1776, and graduated at Glasgow University in 1780. He settled in Liverpool, where he obtained a considerable practice as a physician, and published *Reports on the Effects of Water in Fever and Febrile Diseases* (1797; 4th ed., 1805). He is best known, perhaps, for his (the first) edition of Burns (1800: 7th ed., 1813), prefaced by a *Life* which was long the basis for studies of the poet. Consult the *Memoir* by his son, W. W. Currie (London, 1831).

CURRY, JABEZ LAMAR MONROE (1825-1903). An American lawyer, educator, and clergyman. He was born in Lincoln Co., Ga., but removed to Alabama in 1838, where he was admitted to the bar in 1845, having graduated at the Harvard Law School in this year. He served in the Alabama Legislature from 1847 to 1855 and in Congress from 1857 to 1861 and then became a member of the Confederate Congress. After the war he became a Baptist minister, was president of Howard College, Ala., from 1866 to 1868, and was professor of law at Richmond College from 1868 to 1881. From 1881 to 1885 he was general agent of the Peabody Educational Fund, from 1885 to 1888 was United States Minister to Spain, and subsequently was chairman of the educational committee of the John F. Slater Fund. His publications include: *Constitutional Government in Spain* (1889), *William Ewart Gladstone* (1891), *The Southern States of the American Union* (1894), *Difficulties, Complications, and Limitations Connected with the Education of the Negro* (1895); *Civil History of the Government of the Confederate States, with some Personal Reminiscences* (1901).

CURRY NORMAL AND INDUSTRIAL INSTITUTE. An institution for the training of colored youths, founded in 1889 at Urbana, Ohio, by E. W. B. Curry. The institute includes a Bible school and normal, literary, commercial, music, and industrial departments. The institute extension work is conducted through a race conference and a social settlement. Since the foundation of the institute over 2000 students have been assisted in obtaining an education. These students have been instructed chiefly along industrial lines. In 1912-13 there were 10 officers and instructors in the faculty. There is one combination building used for chapel, recitation rooms, trade schools, and dormitories. There are also cottages for boys' and teachers' dormitories. The real estate and equipment are valued at \$50,000 and the annual income to about \$7000. In 1913 the institute received a gift of \$2000 from Martha Fouse, a former slave. This is to be used as the founda-

tion of an endowment. The institute depends for its support upon gifts from the general public. The library contains about 5000 volumes. The president from its foundation has been Dr. E. W. B. Curry.

CURRY POWDER and CURRY PASTE (Kanarese *kari, kadī*, Malayalam *kari, curry*). A compound condiment added to cooked dishes of meat and rice to render them piquant and appetizing. So generally is curry powder employed in East Indian cookery that it has been called the "salt of the Orient." The substances that commonly form the basis of these powders are turmeric, fenugreek, and sago. To these ginger, black and Cayenne pepper, coriander, caraway, and many other spices are added in varying quantities, or omitted, according to the locality. Such curry powders as contain the pulverized leaves of *Murraya karnigra* (an East Indian tree of the natural order Rutaceæ) are used not only as aromatic stomachic stimulants, but as remedies for dyspepsia, diarrhoea, and even dysentery. The basis of many curry pastes is tamarind (qv).

CURSCHMANN, kursh'mán, HEINRICH (1846-). A German physician, born at Giessen. He studied at the university there, became a lecturer at the University of Berlin in 1875, and in 1876 was appointed head physician of the hospital connected with the city barracks of Berlin. In 1879 he obtained the post of director of the general hospital at Hamburg, and in 1888 was called to the chair of special pathology and therapy in the University of Leipzig. He became recognized as a prominent authority on hospital administration, and from 1886 to 1892 was an associate editor of the *Fortschritte der Medizin*. His publications include: *Entwicklung der Krankenpflege und des klinischen Unterrichts* (1889); *Klinische Abhandlungen* (1894); *Hungersnot im Mittelalter* (1900); *Typhoid Fever and Typhus Fever* (trans. by Alfred Stengel, 1901); *Die Aelteren Papsturkunden des Erzbistums Hamburg* (1909).

CURSCHMANN, KARL FRIEDRICH (1805-41). A German musician, born in Berlin. He studied law at first, then music under Hauptmann and Spohr at Kassel. He became known in Berlin as a singer, made tours in Germany, France, and Italy, and was an exceedingly popular song writer. His works consist of "Roméo," a scena and aria. "Abdul und Erminieh," a one-act opera (1828); and his *Gesammelte Lieder*, comprising 92 selections, published in Berlin in 1871.

CURSE OF KEHAMA, kâ-hâ'ma, THE. A poem by Robert Southey (1810), relating to the adventures of an Indian rajah who is cursed with supernatural powers.

CURSE OF SCOTLAND, THE. In cards, a term applied to the nine of diamonds. Its origin is unknown. Among the many explanations offered are the following: 1. The nine of diamonds is the "pope" in the game of Pope Joan, and hence the symbol of Antichrist to the Reformers. 2. It is the chief card in comette, which game ruined many families in Scotland. 3. It goes back to the nine lozenges on the Dalrymple arms, the Earl of Stair having been responsible for the massacre of Glencoe. 4. Tradition says that the Duke of Cumberland, while drunk and gambling on the night before the battle of Culloden, wrote across the face of this card the order that no quarter was to be given on the morrow.

CURS'IVE WRITING. See PALEOGRAPHY.

CURSÖR, LUCIUS PAPIRIUS. See PAPIRIUS.

CURSÖR MUN'DI (Lat., courier of the world, but intended to mean the course of the world, *cursus mundi*). A poem dating from the beginning of the fourteenth century, professing to be a history of the world from its creation to its destruction. It was based on the paraphrase of Genesis by Caedmon. It is among the works printed by the Early English Text Society.

CURTAIN. A term used in fortification. See BASTION; FORTIFICATION.

CURTAIN, THE. An old theatre in London at Shoreditch, called also the "Greene Curtain," mentioned in 1577 and probably established about that year. The name was probably given from its green curtain, used for the first time in this theatre.

CURTAL FRIAR. A term used by Sir Walter Scott in *Ivanhoe* to denote an irregular clerk or "hedge priest," and applied by him to Friar Tuck of Copmanhurst. The phrase seems to denote a monk with his gown or frock shortened (curtailed) for convenience of moving about. Consult *Ivanhoe*, chap. xxxii, and "Robin Hood and the Curtall Friar," in *Child's Ballads*, v. 273.

CURTA'NA (Neo-Lat., from Lat. *curtus*, short). 1. The name given to the sword of Ogier the Dane. 2. The sword of Roland, the point of which had been broken off in trying it. 3. A pointless sword, also known as "the sword of Edward the Confessor," carried before English kings at coronation and symbolizing mercy.

CURTESY (OF, *curtesie, cortoise*, Fr. *cortoise*, courtesy, from OF, *curtes, cortois*, Fr. *courtois*, courteous, from ML, *cortis*, court, from Lat. *cors, cohors*, place inclosed, connected with Gk. *χῆρος, choros*, garden, Ofr *gart*, sedge, Goth *gards*, lecl. *garþr*, house, OHG *gart*, circle, Ger *Garten*, AS. *geard*, Eng *yard*). In law, the life interest which the surviving husband has in the inheritable estate of the wife. The origin of the estate is involved in obscurity. Both in England and Scotland this customary right is regarded as a national peculiarity—in England, being known as the curtesy of England, and in Scotland as the curtesy of Scotland—whereas there is reason to believe that it had found a place, with all the peculiarities which now belong to it, in the *coutume* of Normandy, whence it was transferred to England (Barrage, vol. ii, p. 60; Stephen's *Commentary*, vol. i, p. 264; Fraser's *Domestic Relations*, vol. i, p. 635). The four circumstances which are requisite to make a tenancy by curtesy in England are lawful marriage, actual seisin of the wife, birth of living issue, and the wife's death. It is not necessary, however, that the child survive: it is enough that it was once in existence, although it may have died immediately after its birth. Not only must the estate of the wife be one of inheritance, i.e., a fee simple or a fee tail, in order that the husband shall be entitled to curtesy therein, but the child born must have been one capable of inheriting the estate in question. Thus, if the estate were entailed on male issue, and a daughter were born, the husband's inchoate estate of curtesy would not become vested, or "initiate," as the phrase was. As soon as the estate becomes vested in the husband by the birth of appropriate issue, he may alienate his life interest in it, subject of course to the wife's rights

therein during her life. If she die first, the estate, notwithstanding the conveyance, is defeated. Originally curtesy attached, as dower still does in most of the United States, to all estates of inheritance of which the wife was seised at any time during the marriage. But it is now generally, though not invariably, limited to such lands as she is seised of at her death; and she may therefore, in most States, by alienating the land during her lifetime or by last will and testament, defeat her husband's claims as tenant by the curtesy. See Blackstone, *Commentaries on the Laws of England*; Pollock and Maitland, *History of English Law* (Boston, 1899); Tiffany, *Law of Real Property*.

CURTILAGE (OF. *cortillage*, *curtillage*, *curtilage*, *courtillage*, from *courtill*, *cortill*, *curtill*, courtyard, from Lat. *cors*, *cohors*, inclosed place). The inclosed space of ground and buildings immediately surrounding or lying near a dwelling and used for its convenient occupation. The term is of feudal origin and originally meant a castle and outbuildings inclosed in a stone wall for defense. There is no exact limit to the area which may be included under the term, and it is a matter of proof in each case as to what is set apart for the use of any particular dwelling. The law has always given the curtilage greater protection than outside property, and this idea prevails to-day, as in most jurisdictions breaking and entering curtilage is burglary, and setting fire to any building in it constitutes arson. See ARSON; BURGLARY; REAL PROPERTY; and consult the authorities there referred to.

CURTIN, ANDREW GREGG (1815-94). An American politician, known as the "war Governor" of Pennsylvania. He was born in Bellefonte, Pa., studied law in Dickinson College, was admitted to the bar in 1839, and soon was recognized as a leading Republican in State politics. He was appointed Secretary of State for Pennsylvania in 1854 and from 1860 to 1866 served as Governor of the State. From 1869 to 1872 he was Minister to Russia; after his return he joined the Liberal Republican revolt, and later he served as a Democratic member of Congress from 1881 to 1887. During the Civil War he was always prompt in his response to President Lincoln's calls for troops, and by his minute care for the persons and families of the Pennsylvania soldiers won their esteem and became widely known as "the soldier's friend." Consult W. H. Eggle, *Life and Times of Andrew Gregg Curtin* (Philadelphia, 1896).

CURTIN, JEREMIAH (1840-1906). An American linguist and translator, born in Milwaukee, Wis. He prepared for Harvard and by his own efforts graduated there in 1863, as an excellent linguist. In the following year he went to Russia, where he remained until 1870 as Secretary of Legation for the United States at St. Petersburg. While serving in this capacity he made a careful study of the languages of the Slavic group, and it was the knowledge thus acquired which enabled him to make his translations of works by Sienkiewicz, Zagoskin, and Alexei Tolstoy. From 1883 to 1891 he was connected with the Bureau of Ethnology of the Smithsonian Institution and after that time made independent researches in matters pertaining to the North American Indians. Curtin was familiar with more than 60 languages. Besides his translations, he also wrote: *Myths and Folktales of the Russian Western*

Slaves and Magyars (1890); *Hero-Tales of Ireland* (1894); *Creation Myths of Primitive America* (1898); *Myths and Folklore of Ireland* (1906); *The Mongols* (1907); *The Mongols in Russia* (1908); *A Journey in Southern Russia* (1909); *Myths of the Modocs* (1912).

CURTIS, BENJAMIN ROBBINS (1809-74). A distinguished American jurist, born in Watertown, Mass. He graduated at Harvard in 1829, was admitted to the Massachusetts bar in 1832, and soon became one of the foremost lawyers of the State. In 1851 he was appointed by President Fillmore to the United States Supreme Court, and in 1857 he dissented, in a powerful argument, from the opinion of the majority in the Dred Scott decision (q.v.). In the same year he resigned and resumed his practice in Boston. During the celebrated impeachment trial of 1868 he was one of President Johnson's counsel. He published several valuable collections of law reports, including *Reports of Cases in the Circuit Courts of the United States* (2 vols., 1854); *Decisions of the Supreme Court of the United States* (22 vols.), and *Digest of the Opinions of the Supreme Court of the United States to 1854*. Consult *Memoirs and Writings of Benjamin R. Curtis* (Boston, 1880), the first volume of which is a memoir by his brother, George Ticknor Curtis (q.v.).

CURTIS, CARLTON CLARENCE (1864-). An American botanist, born at Syracuse, N. Y. He was educated at Syracuse and Columbia universities and also studied at the universities of Cambridge and Leipzig. In 1892-94 he was principal of the Fayette Union School (New York City), in 1894-96 instructor in natural science at the Brooklyn Polytechnic Institute, from 1898 to 1908 tutor in botany at Columbia, and thereafter associate professor. Besides his contributions to botanical journals, he is author of *Text-Book of General Botany* (1897) and *Nature and Development of Plants* (1907; 2d ed., 1910).

CURTIS, CHARLES (1860-). An American legislator, born in Topeka, Kans. His mother was a full-blooded member of the Kaw tribe of Indians. He was educated in the common schools, and after studying law was admitted to the bar in 1881. In 1884 and again in 1886 he was county attorney of Shawnee County. From 1893 to 1897 he served in Congress from the Fourth Kansas District and from 1897 to 1907 represented the First District of the State. He resigned from the House of Representatives in 1907 upon his election to the United States Senate to fill the unexpired term of J. R. Burton, resigned, and was the first Indian to hold such office. He was a candidate for reelection in 1912, but a Democratic Legislature in 1913 brought about his defeat.

CURTIS, CYRUS HERMANN KOTZSCHMAR (1850-). An American publisher, born in Portland, Me. He was educated in the public schools and in 1876 removed to Philadelphia, where he became publisher of the *Tribune and Farmer*. He later established the *Ladies' Home Journal* and made it one of the most successful periodicals in the United States. The Curtis Publishing Company, of which he became head, published, in addition to the *Ladies' Home Journal*, the *Country Gentleman* and the *Saturday Evening Post*, the latter established by Benjamin Franklin in 1728. Under Mr. Curtis's management the *Saturday Evening Post*

attained a larger circulation than had hitherto been reached by any American periodical. In 1913 he took over the interest of A. S. Ochs in the Philadelphia *Public Ledger*.

CURTIS, EDWARD S. (1868-). An American author and photographer, born in Madison, Wis., and educated in the public schools of Minnesota. In 1891 he settled in Seattle as a professional photographer. He was official photographer for the Harriman Alaska expedition; and in 1907-11 published the *North American Indian*, edited by F. W. Hodge, with remarkably valuable photographs which he had taken in "field research under the patronage of J. Pierpont Morgan."

CURTIS, GEORGE CARROLL (1872-). An American geographic sculptor, born at Abington, Mass. He was educated at Harvard University, where he was for a time an assistant in the geological department. Later he became assistant field geologist of the United States Geological Survey. He was the first to apply aerial perspective to topographical models; this he did in models of Boston and vicinity, and of the city of Washington as it existed and as it would appear if a proposed development were carried out. A member of the expedition to the West Indian eruptions, he was the first to visit the crater of La Soufrière and discovered the new summit of Mount Pelée. He also spent a year among the coral islands of the South Pacific and in 1910-11 made a special study of the Atlantic coast from Maine to Newfoundland. Besides his special geological and topographical articles, he is author and illustrator of *A Description of the Topographical Model of Metropolitan Boston* (1900).

CURTIS, GEORGE TICKNOB (1812-94). An American jurist and writer on the constitutional history of the United States. He was born in Watertown, Mass., graduated at Harvard in 1832, was admitted to the bar in 1836, and began the practice of the law in Worcester, Mass. In the following year he removed to Boston, where he continued with short intermissions to practice law until 1862, and from this time until his death he practiced in New York City and before the United States Supreme Court in Washington, D. C. While in Boston he acted for many years as United States Commissioner, and in this capacity, though his sympathies were strongly against the institution of slavery and the rendition of the fugitive slaves, he ordered the return of the escaped slave, Thomas Sims (q.v.), to his master in accordance with the Fugitive Slave Law in 1852 and for so acting was denounced by the Abolitionists throughout the country. Among the cases in which he appeared as counsel are the Dred Scott case, the legal-tender cases, the Colt revolver suits, and the sewing-machine cases. He was popular as a public speaker and delivered many able addresses dealing for the most part with legal or political subjects. He will best be remembered as a writer, and especially as the author of the *Constitutional History of the United States from their Declaration of Independence to the Close of their Civil War* (2 vols., 1896), a part of which was first published in 1854 as *The History of the Origin, Formation, and Adoption of the Constitution of the United States*; and of the *Life of Daniel Webster* (2 vols., 1870), and the *Life of James Buchanan* (2 vols., 1883). He also published, besides numerous magazine articles:

Digest of the English and American Admiralty Decisions (1839); *Rights and Duties of Merchant Seamen* (1841); *American Conveyancer* (1846); *Law of Patents* (1849); *Equity Precedents* (1850); *Commentaries on the Jurisprudence, Practice, and Peculiar Jurisdiction of the Courts of the United States* (1854-58); *Memoir of Benjamin R. Curtis* (1880); *International Arbitrations and Awards* (1885); *Creation or Evolution: A Philosophical Inquiry* (1887); and a novel entitled *John Charaxes: A Tale of the Civil War in America* (1889).

CURTIS, GEORGE WILLIAM (1824-92). An American critic, essayist, and publicist, born in Providence, R. I., Feb. 24, 1824. After a few years at school he began life as a clerk in New York, joined the Brook Farm Community at West Roxbury, Mass., in 1842, went thence, after 18 months, to Concord, Mass., and afterward spent some years in Italy, Germany, and the Orient. Returning to America in 1850, he became well known through his books of travel and his editorship of *Putnam's Monthly*. In *Harper's Monthly* he published a series of papers called *The Editor's Easy Chair*, from 1853 onward, which increased his reputation. He was popular also as an antislavery orator and lecturer, was long the chief editor of *Harper's Weekly*, took an active part as Republican (till 1884) in politics, and after 1871 in the agitation for civil-service reform. He declined offers of diplomatic service abroad. Shortly before his death, which occurred at West New Brighton, S. I., Aug. 31, 1892, he became chancellor of the University of New York. He was the master of an attractive style, and his books of travel and light essays paved the way for the more important services rendered by his polished lectures and orations and by his single-hearted, patriotic labors in behalf of a pure civil service. His strictly literary reputation seems hardly so well assured as it did a few years since, but the man and orator are still remembered with pleasure and gratitude. His youthful years spent at Brook Farm are charmingly set forth in his letters exchanged with John S. Dwight, which have been published in a volume (1898). His most important publications are: *Nile Notes of a Howadji* (1851); *The Howadji in Syria* (1852); *Lotus Eating* (1852); *The Potiphar Papers* (1853), a satire on New York social life; *Prue and I* (1856), generally thought the best of his early books; *Trumps: A Novel* (1861); *Eulogy on Wendell Phillips* (1884); three series of essays from the "Easy Chair" (1892, 1893, 1894, etc.). He edited the *Correspondence of Motley* in 1889 (2 vols.). Charles Eliot Norton edited his *Orations and Addresses* in 1893-94 (3 vols.). Edward Cary wrote his biography for the *American Men of Letters Series* (Boston, 1894).

CURTIS, HENRY (1866-). A British surgeon, educated at University College Hospital, London, and in Paris, Berlin, and Vienna. He had charge of the bacteriological department of University College Hospital in 1896-97 and was surgical registrar in 1898-1900. In 1900-03 he was surgeon to the Queen's Hospital for Children and assistant surgeon to the Royal Waterloo Hospital for Children and Women, and in 1904-06 he was resident surgeon of Bulawayo Hospital and director of the Pasteur Institute for Rhodesia. Later he became surgeon to the Metropolitan Hospital, senior assist-

ant surgeon to the Seamen's Hospital Society, and instructor in operative surgery at the London School of Clinical Medicine. In 1912-13 he was president of the Æsculapian Society. His clinical lectures on surgery and abscesses have been published.

CURTIS, JOHN GREEN (1844-). An American physiologist, born in New York City. He graduated from Harvard University in 1866 and received his medical training at the College of Physicians and Surgeons (Columbia University), New York. At Bellevue Hospital he was an assistant in 1869, house surgeon in 1870-76, attending surgeon in 1876-80. In the College of Physicians and Surgeons he was assistant and demonstrator in anatomy in 1870-75, adjunct lecturer in 1875-76, and adjunct professor of physiology in 1876-83. He became professor of physiology in 1883 and emeritus professor in 1909. Besides contributions to medical journals, he is author of *American Text-Book of Physiology* (1896).

CURTIS, OLIN ALFRED (1850-). An American theologian, born at Frankfort, Me., and educated at Lawrence College and Boston University, and at the universities of Leipzig, Erlangen, Marburg, and Edinburgh. He served as pastor of Methodist Episcopal churches in Janesville, Wis. (1880-83), Milwaukee (1883-86), and Chicago (1888-89), from 1889 to 1895 was professor of systematic theology at Boston University, and in 1896 accepted the corresponding chair at Drew Theological Seminary. Professor Curtis came to be recognized as perhaps the most distinguished Methodist theologian of his generation. Besides many theological papers, his publications include: *Elective Course of Lectures in Systematic Theology* (1901), and *The Christian Faith Personally Given in a System of Doctrine* (1905), a work of great importance.

CURTIS, SAMUEL RYAN (1807-66). An American soldier. He was born near Champlain, N. Y., but when very young removed to Ohio. In 1831 he graduated at West Point and in the following year resigned from the service to become a civil engineer. He afterward studied law, was admitted to the bar, and practiced from 1843 to 1845. In the Mexican War he served as a colonel of volunteers and from 1847 to 1848 was Governor of Saltillo. He was then successively an engineer and a lawyer in the West and for two terms and a part of the third was a member of Congress from Iowa (1857-61). He became a brigadier general of volunteers in 1861, commanded the southwestern district of Missouri from December, 1861, to February, 1862, and the Army of the Southwest from February to August, 1862, and on March 7-8, 1862, defeated the Confederate general Van Dorn in the battle of Pea Ridge (q.v.). Soon afterward he was raised to the rank of major general and subsequently commanded the departments of Missouri (1862-63), of Kansas (1864-65), and of the Northwest (1865), and in 1865, as United States Commissioner, negotiated treaties with several Indian tribes.

CURTIS, WILLIAM (1746-99). An English botanist, born at Alton, Hampshire. He studied botany, pharmacuties, and entomology, established botanic gardens at Lambeth Marsh and at Brompton, and published a number of works on subjects of natural history. His writings include: *Flora Londinensis* (1777-87; the same work, edited by Graves and Hooker, was

republished in 5 vols. in 1817-28); *British Grasses* (1790 and several later editions); and *Lectures on Botany* (3 vols., 1803-04; 2d ed., 1807). In 1781 he established, and for many years thereafter edited, the *Botanical Magazine*.

CURTIS, WILLIAM ELEROY (1850-1911). An American journalist, born in Akron, Ohio, and graduated at Western Reserve University in 1871. From 1873 to 1887 he was on the staff of the *Chicago Inter-Ocean*, and by securing interviews with the James brothers during their contest with Pinkerton's detectives, and in investigating the Ku-Klux Klan of the South, gained a national reputation. He was Washington correspondent of the *Chicago Record* in 1887-1901, when he became associated with the *Chicago Record-Herald*. He was a commissioner of the United States to the Central and South American republics in 1885, was the executive officer of the International American Conference of 1889-90, and was director of the Bureau of American Republics from 1890 to 1893. He wrote: *The Life of Zachariah Chandler* (1879); *Capitals of Spanish America* (1888), *The Land of the Nihilist* (1887); *The United States and Foreign Powers* (1892, 2d ed., 1899); *The Yankces of the East* (1896); *Between the Andes and the Ocean* (1900). *The True Thomas Jefferson* (1901), *Denmark, Sweden, and Norway* (1902), *The Turk and his Lost Provinces* (1902); *The True Abraham Lincoln* (1903); *To-Day in Syria and Palestine* (1904); *Modern India* (1905). *Egypt, Burma, and British Malaysia* (1905).

CURTISS, GLENN HAMMOND (1878-). An American aviator, born at Hammondsport, N. Y. He began life as a newsboy, but was early interested in mechanics. In 1906 at Ormond Beach, Fla., he established the world's record for the fastest mile ever traveled on a motor cycle, making a mile in 26½ seconds. From 1907 to 1909 he was the director of the Aërial Experiment Association of America. He won the *Scientific American* cup in an aeroplane competition at Hammondsport, N. Y. (1908), obtained the international cup in the aeroplane contest at Rheims (1909), and won a \$10,000 prize offered by the New York World in a record-breaking flight from Albany to New York (1910). In 1913 he was awarded a medal by the Smithsonian Institution. Besides making a large number of flights in America and in Europe, Curtiss became actively engaged in the commercial side of aviation, being secretary and treasurer of the Curtiss Exhibition Company of New York and president of the Curtiss Aeroplane Company at Hammondsport, N. Y. With the exception of the Wright brothers, none other has done so much as he for aviation in America. He is part author of *The Curtiss Aviation Book* (1912). See *AEROPLANE* and *AERONAUTICS*.

CURTISS, SAMUEL IVES (1844-1904). An American biblical scholar, born at Union, Conn. He was educated at Amherst College, at Union Theological Seminary, and at the universities of Leipzig and Berlin. From 1874 to 1878 he was pastor of the American Chapel at Leipzig, Germany, and then was professor of biblical literature and, after 1879, of Old Testament literature and interpretation at the Chicago Congregational Theological Seminary. In addition to several translations of important works from the German, especially by Delitzsch, his writings include: *A Plea for a More Thorough*

Study of the Semitic Languages in America (1879); *Moses and Ingersoll* (1881); "Ezekiel and his Times," in *The Bible as Literature* (1876), and *Primitive Semitic Religions To-Day* (1902), his special study.

CURTIVS, kurt'se-us, ERNST (1814-96). A distinguished German archaeologist and historian, born at Lübeck. He studied at the universities of Bonn, Göttingen, and Berlin, traveled in Greece and Italy, and in 1844 was appointed a professor at Berlin and preceptor of the Crown Prince Frederick William, afterward Frederick III. From 1856 to 1863 he was professor of classical archaeology and philology at Göttingen, whence he returned to Berlin as professor of ancient history. From 1853 Curtius was a member of the Royal Academy of Sciences, from 1871 to 1893 he was continuously secretary of the philologico-historical section of that institution. Under Imperial commission in 1874 he negotiated with the Greek government in regard to the German excavations at Olympia (qv), begun by him in the following year. With Schöne he edited the *Archaeologische Zeitung*, to which he made many important contributions. He must be reckoned among the great scholars of modern Germany, a thinker of imperious influence alike in his academic instruction and in his published works. These latter include: *Peloponnesos* (2 vols., 1851-52), a study of the Greek peninsula with special reference to its mythology, history, and monuments of art. *Griechische Geschichte* (3 vols., 1857-67; 6th ed., 1889), in which he endeavored to present in popular form the results of expert research. *Attische Studien* (1863-64). *Die Stadtgeschichte von Athen* (1891), three volumes of collected lectures and addresses, entitled *Altatum und Gegenwart*, *Gesammelte Abhandlungen* (1894). Consult Gurlitt *Erinnerungen an Ernst Curtius* (Berlin, 1902). Grimm, "Ernst Curtius: Ein Brief an seine Freunde," in *Die Deutsche Rundschau*, vol. lxxviii (Berlin, 1896), and F. Curtius, *Ernst Curtius: Ein Lebensbild in Briefen* (Berlin, 1903). Sandys, *A History of Classical Scholarship*, vol. iii (Cambridge, 1908).

CURTIVS, GEORG (1820-85). An eminent German comparative philologist. He was the brother of Ernst Curtius and was born at Lübeck. He studied at the universities of Bonn and Berlin, in 1849 became professor extraordinary, and in 1851 full professor of philology in Prague. In 1854 he was called to Kiel and in 1862 to Leipzig, where he remained. Curtius was the teacher of many of the most eminent comparative philologists of the present day. His most important works are his *Sprachvergleichung in ihrem Verhältnisse zur klassischen Philologie* (1845); *Sprachvergleichende Beiträge zur griechischen und lateinischen Grammatik* (1846). *Griechische Schulgrammatik* (1852; over 20 eds. since), *Grundzüge der griechischen Etymologie* (5th ed., 1879). *Das Verbum der griechischen Sprache* (2d ed., 1877-80). In his *Studien zur griechischen und lateinischen Grammatik* (1868-78) he published not only his own studies, but those of his pupils and others. In 1878, with Lange, Lipsius, and Ribbeck, he founded the *Leipziger Studien zur klassischen Philologie*. Several of his works were translated into English and stimulated interest in Greek grammar and comparative philology. Consult Sandys, *A History of Classical Scholarship*, vol. iii (Cam-

bridge, 1908), and Platner, *The Topography and Monuments of Ancient Rome* (2d ed., Boston, 1911).

CURTIVS, kūr'shi-us, METTUS. In Roman legend, the leader of the Sabines who occupied the Capitoline Hill, in the battle with the Romans of the Palatine, during the reign of Romulus. To escape death he plunged with his horse into a morass, on ground afterward occupied by the Forum, from which he extricated himself with difficulty. The morass was thenceforth called *Lacus Curtius*. For the so-called *Lacus Curtius* in the Forum, consult Hülsen-Carter, *The Roman Forum* (Rome, 1906).

CURTIVS, QUINTIVS (QUINTIVS CURTIVS RUFUS). A Roman historian, commonly supposed to have flourished in the time of Claudius. He was the author of the interesting work *Historiae Alexandri Magni*, in 10 books, of which the first two have been lost, and the rest are incomplete. Curtius had a very inaccurate knowledge of geography, chronology, military tactics, astronomy, and historic criticism, hence his work is far from being reliable as a whole. The style, though declamatory, is in general pure and elegant. Modern editions are by Vogel (Leipzig, 1884). Dosson (Paris, 1887). Hedecke (1908). There is a translation into English by Crosby (New York and London, 1858). Consult S. Dosson, *Etude sur Quinte-Curce, sa vie et ses œuvres* (1887). For a fresh presentation of the view that Curtius should be assigned to a much later date, consult Steele, *Proceedings of the American Philological Association*, vol. xlii, li-liv (1912), and the Introduction to the English edition by Heitland and Raven (Cambridge, 1880).

CURTIVS, kurt'se-us, THEODOR (1857-). A German chemist. He studied at several German universities and, after the publication of a series of original researches, became professor of chemistry at Kiel in 1889; in 1897 he went to Bonn, but on the death of Victor Meyer, in the same year, accepted the professorship of chemistry at Heidelberg. Curtius discovered new series of important compounds of nitrogen, including hydrazine and many of its derivatives, and the diazo derivatives of the fatty series of organic compounds.

CURULE CHAIR (trans. of Lat. *sella curulis*, from *sella*, seat, and *currus*, chariot, from *currere*, to run). The chair of state, equivalent to a throne, among the early Romans, used by the curule magistrates, dictators, consuls, praetors, and curule aediles, on formal occasions. The chair was usually ornamented with ivory, gold, or other precious work. It had curved legs, but no back: it could be folded up as a camp stool is folded. The right to sit in the presence of others and to ride in a carriage in the city of Rome were precious privileges of certain magistrates. The ancients explained the adjective *curules*, applied to certain magistrates (see above), as given because they rode in a curule, 'chariot.'

CURULE MAGISTRATES. See CURULE CHAIR.

CURUMINACAN, koo-rōō-mē-nā'kan. A minor linguistic stock of South American Indians, in the region of Lower Peru. Rivet thinks it may turn out to be a dialect of the Otuquian or Otuké.

CURVATURE. See CURVE.

CURVATURE OF FIELD OF A LENS. See LIGHT.

CURVATURE OF THE EARTH'S SURFACE. See CURVE.

CURVATURE OF THE SPINE. See POTTS'S DISEASE; SPINE.

CURVE (OF. *courbe*, *corbe*, Fr. *courbe*, Sp., Portug., It. *curvo*, from Lat. *curvus*, curved, OChurck Slav. *krivŭ*, bent, Lith. *kreivas*, crooked). In common language, a line that constantly departs from a fixed direction. In analytic geometry, however, the word is commonly used to designate the locus of a point moving according to any definite law and hence to include the straight line. If the statement of the law according to which the point moves can be translated into an equation or equations between the coördinates (q.v.) of the moving point, these equations may be used to represent the curve—e.g., the circle is the locus of a point moving in a plane at a constant finite distance from a fixed point in that plane, and its equation is $x^2 + y^2 = r^2$. (See COORDINATES.) If the curve possesses the property of continuity (q.v.), it is precisely definable at every point, although it may contain singularities. The form of a curve corresponds to the nature of its equation; hence a curve may be designated as algebraic or transcendental according as its equation consists of algebraic or transcendental functions of the coördinates; e.g., the conic sections are algebraic curves, and the cycloid, the logarithmic spiral, and the catenary are transcendental curves. Algebraic curves are fundamentally grouped into orders and classes, according to Newton's classification. The order of a plane curve is determined by the number of points, real or imaginary, in which it intersects any line in its plane. Curves which cut such lines in two points are called curves of the second order; those which cut the lines in three, points curves of the third order, and so on—e.g., the conic sections are all curves of the second order, and cubic curves are of the third order. The straight line is the only line of the first order. Similarly the order of an algebraic curve in space depends upon the number of points in which it cuts any plane. The class of an algebraic plane curve is determined by the number of tangents, real or imaginary, which can be drawn to it from any point in its plane. If two tangents are possible, it is a curve of the second class; if three are possible, a curve of the third class, and so on—e.g., the conic sections are curves of the second class; the cissoid (q.v.) is of the third class. Similarly the class of a space curve is given by the number of tangent planes which can be drawn containing any fixed line. The class of a plane curve depends directly upon its order when no singularities exist. If n is the order and c the class, $c = n(n-1)$. Thus, a conic with no singular points is of the second class, since $c = 2(2-1) = 2$; the cubic is of the sixth class, since $c = 3(3-1) = 6$. But singularities tend to diminish the class. Plücker gave six equations connecting the order, class, number of double points, number of double tangents, number of stationary points, and number of stationary tangents from which, if any three of these numbers are given, the other three may be obtained. The one directly connecting the order and class is $c = n^2 - n - 2d - 3p$, in which c is the class, n the order, d the number of double points, and p the number of stationary points. Thus, a cubic with one double point is a curve of the fourth class, since $c = 9 - 3 - 2 = 4$. By the aid of covariants (see FORMS),

the class of a curve can be determined directly.

Singularities. 1. An algebraic curve whose equation is $y = f(x)$ is convex or concave downward, according as $\frac{d^2y}{dx^2}$ is positive or negative.

2. A point of inflection is one at which the tangent to the curve takes a limiting position—i.e., the point of contact of a stationary tangent, at which $\frac{d^2y}{dx^2} = 0$ or ∞ . See CURVE

OF SINES.

3. A multiple point is one at which more than one tangent exists—i.e., a point for which $\frac{dy}{dx}$ has more than one value. Two values

determine a double point, three values a triple point, and so on. A multiple point is also called a node or crunode. Multiple points of the third order are divided into classes according to the relative number of cusps and crunodes involved.

4. When two branches of a curve have a common tangent at a point, but do not pass through the point, they are said to form a cusp, called also a spinode or stationary point. See CISSOID, COXCHOID.

5. An isolated point whose coordinates satisfy the equation of the curve is called a conjugate point or acnode. An acnode is a multiple point at which the tangents are imaginary. A node or conjugate point corresponds to a double tangent, and a cusp to a stationary tangent. See also CARDIOID; CARTESIANS, CASSINIAN OVAL; CATENARY, CAUSTIC, CYCLOID; ELLIPSE; FOLIUM, HODOGRAPH, LEMNISCATE; SPIRAL; WITCH.

Curvature. The curvature of a plane curve at any point is its tendency to depart from a tangent to the curve at that point. In the circle this deviation is constant, since the curve is perfectly symmetrical round its centre. The curvature of a circle varies, however, inversely as the radius—i.e., it diminishes at the same rate as the radius increases. The reciprocal of the radius is therefore taken as the measure of the curvature of a circle. A straight line may be considered a circle of infinite radius and as having no curvature, since $\frac{1}{\infty} = 0$. The constancy of curvature in the circle suggests an absolute measure of curvature at any point in any other curve, for whatever be the curvature at that point a circle can be found of the same curvature. The radius of this circle is called the radius of curvature for that point, and the circle itself is called the osculating circle. By means of this radius we may compare the curvatures at different points of the same curve or of different curves. In simple cases, as in the conic sections, the measure or radius of curvature may be determined geometrically, but it is usually necessary to employ the calculus. The expression for the radius of curvature at any point (x, y) of a curve is

$$\rho = \frac{\left[1 + \left(\frac{dy}{dx}\right)^2\right]^{\frac{3}{2}}}{\frac{d^2y}{dx^2}}$$

If the curve, instead of lying in a plane, twists in space, it is sometimes called a *gauche curve* or a curve of double curvature, and its curva-

ture at any point may be measured by the radius of its osculating sphere at that point. The centre of the osculating circle or sphere is called the centre of curvature. The curvature of surfaces is determined similarly to that of curves. Thus, the measure of the curvature of the earth, commonly taken as the deviation of the line of apparent level from the line of true level—i.e., from a line everywhere parallel to the surface of still water—is approximately 8 inches per mile.

Relations. The following are some of the more important relations which exist among certain groups of curves:

1. The evolute (q.v.) of a curve is the locus (q.v.) of its centre of curvature. Regarding the evolute as the principal curve, the original curve is called its involute. The normals to any curve are tangents to its evolute.

2. Two curves or surfaces are said to have contact when they touch at two or more consecutive points. A contact (q.v.) of the n th order exists between two curves $y_1 = \phi(x)$, $y_2 = \psi(x)$ at the point whose abscissa is a when $\phi(a) = \psi(a)$, $\phi'(a) = \psi'(a)$, $\phi''(a) = \psi''(a)$. If n is even, the curves cross at the point. No curve which has contact of a lower order can pass between the given curves. Curves which have contact of the first order have a common tangent, and those having contact of the second order have a common radius of curvature at the point of contact.

3. The envelope of a curve is the locus of the ultimate intersections of the individual curves of the same species, obtained by constantly varying a parameter of the curve. That is, the envelope touches all of the intersecting curves thus obtained. e.g., if p is a variable parameter and $f = 0$ is the equation of the curve, then the result obtained by eliminating p between $f = 0$

and $\frac{df}{dp} = 0$ is the equation of the envelope.

Every curve may be an envelope, and some curves are evidently so by definition—e.g., evolutes and caustics (qqv.).

4. The process of replacing each radius vector of a curve by its reciprocal is called inversion. The origin is called the centre of inversion and the resulting curve the inverse of the given one. See CIRCLE, *Inversion*.

5. The locus of the feet of the perpendiculars from the origin upon the tangents to a curve is called a pedal curve. The pedal of a pedal is called the second pedal, and so on. Reversing the order, the curves are envelopes and are called negative pedals. The pedal and reciprocal polar are inverse curves (See CIRCLE.) In general, to find the inverse of a curve whose equation is given in rectangular coordinates, substitute for x and y the expressions $\frac{k^2x}{x^2+y^2}$ and $\frac{k^2y}{x^2+y^2}$ respectively.

6. A roulette is defined as the locus of a point rigidly connected with a curve which rolls upon a fixed line or curve. See CYCLOID.

Centres. A point such that every radius vector (see COORDINATES) drawn from it to a point on the curve is matched by another vector of the same length in the opposite direction is called the centre of a curve. See also CIRCLE and the paragraph on *Curvature* above.

When a plane figure moves in any manner in its own plane, the instantaneous centre of rotation is the intersection of two lines drawn

through two points perpendicular to the directions in which the points are moving.

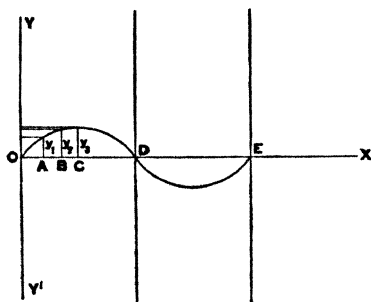
The number of kinds of curves that might be drawn is infinite. A large number are known by specific names and are objects of great interest on account of their beauty, their remarkable properties, or their relation to physical problems. Among those discussed under separate titles are the conic sections, cissoid, conchoid, lemniscate, cycloid, trochoid, witch, cardioid, cartesians, Cassinian ovals, caustic curve, tractrix, curve of pursuit, catenary, curves of circular functions (e.g., curves of sines), logarithmic curves, and spirals.

Though the history of curves is inseparable from that of geometry, it may roughly be divided into four periods: (1) the synthetical geometry of the Greeks, in which the conic sections (q.v.) play an important rôle; (2) the birth of analytic geometry, in which the synthetic geometry of Guldin, Desargues, Kepler, and Roberval merged into the coördinate geometry of Descartes and Fermat; (3) the period 1650 to 1800, characterized by the application of the calculus to geometry and including the names of Newton, Leibnitz, the Bernoullis, Clairaut, Maclaurin, Euler, and Lagrange; (4) the nineteenth century, the renaissance of pure geometry, characterized by the descriptive geometry of Monge, the modern synthetic geometry of Poncelet, Steiner, Von Staudt, Cremona, and Plücker. Descartes' contributions were confined to plane curves, but led to the discovery of many general properties. The scientific foundations of the theory of plane curves may be ascribed to Euler (1748) and Cramer (1750). Euler distinguished algebraic from transcendental curves, and Cramer founded the theory of singularities. Clairaut (1731) attacked the problem of double curvature; Monge introduced the use of differential equations. Möbius (1852) summed up the classification of the cubic curve. Zeuthen (1874) did the same for the quartics, and Borchert (1827) first used trilinear coordinates (q.v.). In 1828 Plücker published the first volume of his *Analytisch-geometrische Entdeckungen*, which introduced abridged notation and marked a new era in analytic geometry. To him is due (1833) the general treatment of foci, a complete classification of cubics (1835), and his celebrated "six equations" (1842). Hesse (1844) gave a complete theory of inflections and introduced the so-called Hessian curve as the first instance of a covariant of a ternary form. To Charles (q.v.) is due the method of characteristics developed by Halphen (1875) and Schubert (1879), and the general theory of correspondence (1864), completed by Cayley (1866) and Brill (1873). Cayley's influence was also very great. He advanced the work of Plücker, investigated bitangents and osculating conics, extended the properties of covariants and invariants, as well as Salmon's theory of reciprocal surfaces and the theory of double curvature. Mention should also be made of the labors of Jean-Claude Bouquet (1819-85) and Charles-Auguste-Albert Briot (1817-82), two of Cauchy's most eminent pupils, whose labors in the field of geometry and theory of functions are well known. Their *Leçons de géométrie analytique* (Paris, 1847) has been translated into English (Chicago, 1896) and forms an excellent introduction to the subject. Besides the works of those mentioned in connection with

the development of curves, consult, for theory: Salmon, *Treatise on the Higher Plane Curves* (Dublin, 1852); Study, *Vorlesungen über ausgewählte Gegenstände der Geometrie* (Leipzig, 1911); Clebsch, *Vorlesungen über Geometrie* (ib., vol. i, 1875-76; vol. ii, 1891); Staudé, *Analytische Geometrie des Punktepaars, des Kegelschnittes und der Fläche zweiter Ordnung* (ib., 1910); Runge, *Analytische Geometrie der Ebene* (ib., 1908); Hilbert, in the *Mathematische Annalen*, vol. xxxviii: Brill-Noether, in the *Jahresbericht des deutsch Math.-Verein.*, vol. iii; and for history, Merriman and Woodward, *Higher Mathematics*, chap. xi (New York, 1896); Brocard, *Notes de bibliographie des courbes géométriques* (Bar-le-Duc, 1897-99).

CURVE OF PURSUIT. The problem of the curve of pursuit first attracted attention in the following form: To find the path of a dog which takes the shortest course to reach his master, while the master is walking in a straight line. This problem, though stated in various forms, resolves itself mathematically into finding the curve traced by a point A whose movement is always directed towards a point B moving on a known curve. The curve seems to have been studied first by Pierre Bouguer (1732). The result is, in general, an algebraic curve, in particular cases, logarithmic. For a solution of the problem, consult Salmon, *Treatise on the Higher Plane Curves* (Dublin, 1852).

CURVE OF SINES. A curve whose ordinates are equal or proportional to the sines of a variable angle and whose abscissas are equal to the corresponding arcs of the unit circle. This curve is also called an harmonic curve, it being the curve in which a musical string vibrates when sounded.



CURVE OF SINES.

In the figure, OA represents the length of an arc whose sine is y_1 , OB the length of an arc whose sine is y_2 , and so on. The ordinate y_3 is the sine of 90° , and is the maximum ordinate of the curve. D , which corresponds to an angle of 180° , is a point of inflection, the radius of curvature being infinite. Similarly the curves of the other trigonometric functions (cosine, tangent, etc.) may be represented graphically.

CURVES, ANTICLINEAL AND SYNCLINAL. See ANTICLINE AND SYNCLINE.

CURWEN, JOHN (1816-80). An English music reformer and writer. He was born at Heckmondwike, in Yorkshire, and was early influenced by the community music, in those days characteristic of every Yorkshire village. The

influence of Handel, and his oratorios, more than any other single factor, had caused choral and philharmonic societies to spring up throughout the northern counties of England. In order to develop these and the numerous local band organizations, Curwen, then a dissenting minister, resigned his pastorate and, becoming interested in the "tonic sol-fa" system, invented by Miss S. A. Glover, spent his entire time in propagating it. In 1853 he had begun to found associations for spreading the theory and in 1862 established the Tonic Sol-Fa College. He was successful enough to start a publishing house in London, where he published the *Tonic Sol-Fa Reporter*. Nearly all of his many publications are for the system of his choice. He died at Heaton Mersey, near Manchester. Consult J. S. Curwen, *Memorials of John Curwen* (London, 1882).

CURWENSVILLE. A borough in Clearfield Co., Pa., 34 miles (direct) northwest of Altoona, on the New York Central and Hudson River, the Buffalo, Rochester, and Pittsburgh, and the Pennsylvania railroads, and on the Susquehanna River (Map: Pennsylvania, D 5). The chief industries are coal mining, tanning, and the manufacture of fire brick. Pop., 1900, 1937; 1910, 2549.

CURZOLA, Kōri-dzū'lā (Slav. *Korcula, ancient *Corcyra Nigra* so called from the sombre color of its pine forests). An island in the Adriatic, off the coast of the Austrian Crownland of Dalmatia, of which it forms administratively a part, and is situated in lat 43° N. and long 17° E. It is about 25 miles long, has an area of 107 square miles, and is hilly, the greatest altitude being 1880 feet. It is well wooded and produces grain, wine, and olives. The inhabitants are engaged chiefly in boatbuilding, seafaring, and fishing. There are several good harbors. Pop. of Curzola administrative district, Dec. 31, 1910, 29,908, almost entirely Roman Catholic. The principal towns are Curzola, the administrative seat, with 2157 inhabitants in 1910 (as a commune, 7144), and Blatta, with 6837 inhabitants (as a commune, 8862). The island came under Austrian rule in 1815.

CURZON, GEORGE NATHANIEL, EARL CURZON OF KEDLESTON (1859-) An English statesman, born at Kedleston. He studied at Balliol College, Oxford, became assistant private secretary to the Marquis of Salisbury in 1885, and from 1886 to 1898 sat as a Conservative for the Southport division of southwest Lancashire. In 1891-92 he was Undersecretary of State for India and in 1895-98 Undersecretary of State for Foreign Affairs. He was appointed, in 1898, Viceroy and Governor-General of India. He gave himself up to the duties of his office with almost unprecedented devotion and energy, making the promotion of the material welfare of the people of India his special concern. Owing, however, to his masterful disposition, he did not escape criticism, and, in particular, the partition of Bengal in 1905 aroused violent resentment among the natives. In the same year he came into conflict with Lord Kitchener, commander in chief of the forces, over the latter's proposals looking to the restriction of the power of the civil government over the army, and when the home government supported Lord Kitchener, the Viceroy resigned, Aug. 12, 1905. He did not, however, retire from public life. In 1908 he became chancellor of

Oxford University and in the same year a peer of Ireland. In the latter capacity, in 1910, he was one of the most influential leaders of the Unionist party in their great struggle with the Liberals, and it was owing considerably to his influence that the House of Lords permitted the Parliament bill to become law. Curzon became known also as an advocate of universal military service and an active opponent of woman's suffrage. In 1895 he married Miss Leiter, of Chicago, who died in 1906. He published: *Russia in Central Asia* (1889); *Persia and the Persian Question* (1892); *Problems of the Far East* (1894). Consult Lipsett, *Lord Curzon in India, 1898-1905* (London, 1906).

CUSA, NIKOLAS OP, or NIKOLAUS CUSANUS (1401-64). A Roman Catholic philosopher and theologian. He was born at Kues, on the Moselle, in the Diocese of Treves; educated at Deventer by the Brethren of the Common Life and at the University of Padua; became Archdeacon of Liège and attended the Council of Basel (1431-49), where he opposed the papal claims but, altering his views, he entered the papal service and was made a cardinal in 1448; Bishop of Brixen in the Tirol, and papal legate for Germany in 1450. He died at Todi, Italy, Aug. 11, 1464. He was interested in promoting reform in the church. As a philosopher, he was one of the first to break with the ruling scholasticism. He taught that God cannot be apprehended by the intellect, but by intuition. As a mathematician and natural philosopher, he first taught the revolution of the earth about the sun and the plurality of worlds, as critic, he declared the so-called "Donation of Constantine" to be a forgery. His most important writings have been translated into German by F. A. Scharpf (Freiburg, 1862), who also published the first part of a biography (Mainz, 1842), and subsequently *Der Cardinal und Bischof Nikolaus von Cusa* (Tübingen, 1871). Consult also Falkenburg, *Grundzüge der Philosophie des Nikolaus von Cusa* (Breslau, 1880); Schanz, *Cardinal Nikolaus von Cusa als Mathematiker* (Rottweil, 1872); id., *Die astronomischen Anschauungen des Nikolaus von Cusa und seine Zeit* (ib., 1873); Höfding, *History of Modern Philosophy*, vol. 1 (New York, 1900).

CUSACK, MARY FRANCES (1820-99). An Irish nun, known as the NUN of KENMARE. She was born near Dublin, Ireland, and spent her youth in England, where she joined a Church of England sisterhood. She later became a Catholic and upon her return to Ireland took a deep interest in the Franciscan sisterhoods known as Poor Clares, organized for the purpose of providing poor and friendless girls with a useful education. From 1861 to 1884 she conducted the celebrated convent of Poor Clares, established by her at Kenmare. In 1884 Pope Leo XIII sanctioned the founding of the order known as Sisters of Peace. After the establishment of a house in Nottingham, England, in 1884, she founded a branch of the order at Jersey City, N. J. (1885). Among her works are: *A Student's Manual of Irish History* (1870); a biography of O'Connell (1872); *Woman's Work in Modern Society* (1874); *The Book of the Blessed Ones: St. Trias Thaumaturga* (1877), lives of St. Patrick, St. Bridget, St. Columba; and several volumes on the shrine of the Virgin at Knock, County Mayo.

Consult *The Nun of Kenmare: An Autobiography* (Boston, 1888).

CUSACK-SMITH, SIR BERRY (1859-). An English legislator. He was born at Dublin and was educated at the Middle Temple. After acting for one year as Consul at Samoa and Deputy Commissioner for the western Pacific, he was in 1891 sent as Consul General to Valparaiso, whence he was again transferred in 1892 to the Tokelau Islands. As special judicial commissioner to Samoa, he acted, conjointly with the consuls of Germany and the United States, as receiver and custodian of the revenues of the islands and as President of the municipality of Apia. From June, 1900, to December, 1901, he was chargé d'affaires at Santiago, and was Consul General at Valparaiso in 1898-1905.

CUSCUS. See PHALANGER, and Plate of PHALANGERS.

CUSCUS. See VETIVER.

CUSCUTA. See DODDER.

CUSH (Heb. *Kūsh*). The eldest son of Ham, according to the genealogical scheme given in the tenth chapter of Genesis. In the Bible he seems to be regarded as the eponymous ancestor of the Cushites, or people of the land of Cush, a country mentioned in a number of passages of the Old Testament. The Babylonian Nimrod is also said (Gen. x. 8) to have been a son of Cush. The "Land of Cush" is rendered "Ethiopia" in the Septuagint, in the Vulgate, and in most modern versions of the Bible, and until comparatively recent times the country has been generally identified with the ancient Ethiopia (i.e. Nubia), called by the Egyptians *Kōsh*, though some scholars have supposed that it also included a portion of Arabia. Some modern critics believe that in Gen. x Cush (v. 6) the brother of Mizraim (Egypt) and Cush (v. 8) the father of the Babylonian Nimrod are two different persons, and that the name of the second Cush represents *Kashahu*, an old name for Babylonia. They further maintain that the Arabian Cushites (Gen. x. 7) were also of a different stock, and that thus, under the same name, three different peoples are confused in the biblical account. Other scholars, however, adhering to the older view, believe that the dark Ethiopian race once extended across Arabia into, or even beyond, Babylonia.

CUSHAT, *kush'at* (AS. *cūcate*, ring dove, from *cucu*, quick + *scotan*, to shoot; so called from the bird's swift flight), or CUSHTE-Doo (Scottish). A dove.

CUSHING, *kush'ing*, CALEB (1800-79). An American statesman, the first American Minister Plenipotentiary to China. He was born at Salisbury, Mass., and was educated at Harvard, where he graduated when 17 years old. He practiced law at Newburyport and was elected to the State Legislature in 1825 and to the State Senate in 1826. From 1829 to 1831 he traveled in Europe. He was elected to Congress in 1835 and served four terms as a Whig, but afterward joined the Democratic party. President Tyler nominated him as Secretary of the Treasury, but the Senate rejected the nomination. Tyler then appointed him Minister to China, where new ports were to be opened according to the Treaty of Nanking. Here he made good use of his erudition and talents. When he arrived, Feb. 24, 1844, at Canton in the frigate *Brandywine*, he had already made the general outline of the treaty, which greatly

abridged the subsequent negotiations. The Peking government honored the United States by sending as High Treaty Commissioner Ki-Ying, a member of the Imperial family, who, on July 3, 1844, signed the convention, which contained 16 provisions not included either in the English Treaty at Nanking or in the treaty supplementary thereto. Among these was the right of Christian missionaries to follow the openings of commerce and to build dwelling houses, churches, and hospitals and to have cemeteries, while Chinese scholars acting as teachers or assistants were to be protected from injury. The purchase of books was legalized, and American citizens were forbidden to engage in the opium trade, or to use the flag of the United States to cover a violation of the laws of China. In short, this treaty, because of its fullness of detail and clear exhibition of the rights conceded by the Chinese government to foreigners dwelling within its borders, was the leading authority in settling disputes until 1860, when foreigners were admitted to Peking.

After his return to the United States Cushing advocated the Mexican War and furnished the necessary funds to equip a regiment of which he was made colonel. He subsequently rose to be brigadier general. In 1852 he became associate justice of the Supreme Court of Massachusetts and in 1853 entered the cabinet of President Pierce as Attorney-General, serving through the entire administration. He favored the Union cause during the Civil War. When the arbitration of the "Alabama Claims" was to be settled at Geneva in 1871, President Grant chose Mr. Cushing as one of the three men who were to be counsel for the United States. In 1873 he was nominated Chief Justice of the United States, but the nomination was withdrawn. From 1874 to 1877 he was Minister of the United States at the court of Spain. Mr. Cushing was a man of unusual erudition and of rare ability, imposing in person and forcible in argument. He was the author, among other works, of *The Practical Principles of Political Economy* (1826); *The Growth and Territorial Progress of the United States* (1839); *Reminiscences of Spain* (1833); *Historical Review of the Late Revolution in France* (1833). *The Treaty of Washington* (1873).

CUSHING, FRANK HAMILTON (1857-1900). An American ethnologist. He was born at Northeast, Pa., spent his boyhood on a farm in New York State, and at the age of 16 began excavations on the sites of Indian camps. He studied for a time at Cornell University in 1875 and in 1876 had charge of a part of the National Museum collection at the Centennial Exposition at Philadelphia. He went to New Mexico in 1879 as assistant ethnologist of the United States Bureau of Ethnology and remained for three years among the Zuñi Indians. He was adopted into the tribe, made a thorough study of the habits, folklore, language, and history of the Pueblo Indians of New Mexico and Arizona, and became the recognized authority in this branch of American ethnology. In 1896 he conducted the Pepper-Hearst expedition to the Gulf coast of Florida and published a *Report on the Ancient Key Dwellers of Florida*. Among his publications are: *Zuñi Fetiches* (1881); *The Relationship between Zuñi Sociologic and Mythic Systems* (1882); *The Nation of the Willows* (1882); *Adventures in Zuñi* (1883); *Studies of Ancient Pueblo Ceramic*

Art, as Illustrative of Zuñi Culture Growth (1884); *Zuñi Breadstuff* (1885). A volume entitled *Zuñi Folk-Tales* was published posthumously in 1902.

CUSHING, HARVEY (WILLIAMS) (1869-). An American surgeon, born in Cleveland, Ohio. He was educated at Yale and Harvard universities, and in 1895 took up the practice of surgery. From 1902 to 1911 he was associate professor of surgery at Johns Hopkins University, and in the latter year he became professor of surgery at Harvard. With Dr. George W. Crile (q.v.) he made an important contribution to the study of blood pressure in surgery. (See *BLOOD PRESSURE*.) In 1913 he received an honorary fellowship from the Royal College of Surgeons. He is author of *Dr. Garth, the Kit-Kat Poet, 1661-1718* (1906) and *The Pituitary Body and its Disorders* (1912).

CUSHING, LUTHER STEARNS (1803-56). An American lawyer and law reporter, best known as the author of a *Manual of Parliamentary Practice*, commonly known as *Cushing's Manual* (1845), a work which is still regarded as an authority. He was a native of Massachusetts and was judge of the Court of Common Pleas in Boston and reporter for the Supreme Court of the State. His publications include: *Treatise on Trustee Process* (1837); *Treatise on Remedial Law* (1837); *Reports of Controverted Election Cases in Massachusetts* (1852); *Introduction to the Study of Roman Civil Law* (1854); *Lex Parliamentaria Americana* (1856; 9th ed., 1874).

CUSHING, THOMAS (1725-88). An American statesman, born in Boston. He was a graduate of Harvard, was Speaker in 1766-74 of the Massachusetts Assembly, and in 1774-75 was a member of the First and Second Continental Congresses. In England he had the groundless reputation before the outbreak of the war of being the great leader of the American revolutionary movement, and Dr. Johnson, in some of his pamphlets, accused him of aiming at an American crown. At home, however, he made himself unpopular by opposing the Declaration of Independence. From 1780 to 1788 he was Lieutenant Governor of Massachusetts. In 1788 he was a member of the convention which ratified the Federal Constitution for Massachusetts.

CUSHING, WILLIAM (1732-1810). An American jurist, born at Scituate, Mass. He was appointed Chief Justice of the State Superior Court in 1777, became an associate justice of the United States Supreme Court in 1789, and in 1796 declined the Chief Justiceship, for which he had been nominated by Washington. He was a founder of the American Academy of Arts and Sciences.

CUSHING, WILLIAM BARKER (1842-74). An American naval officer, born in Delfield, Wis. He studied at the United States Naval Academy from 1857 to 1861, and at the outbreak of the Civil War entered the United States navy as a volunteer. In 1862 he was promoted to be lieutenant. He soon became known for his fearless and successful performance of perilous tasks assigned to him, the most notable of which was the destruction by torpedo of the Confederate ram *Albatross*, on the night of Oct. 27, 1864, at her moorings in Plymouth Harbor, N. C. This exploit won him the thanks of Congress and the rank of lieutenant commander. He also led a land attack on Fort Fisher in 1865, and later he served in the Pacific and Asiatic

squadrons and was commissioned commander in 1872.

CUSHING, WILLIAM HENRY (1852-). A Canadian manufacturer and statesman. He was born near Kenilworth, Ontario, and was educated at the public schools. After working on a farm for some years he went west to Calgary in 1883 and engaged in business, later becoming the head of an important manufacturing concern and the owner of extensive timber limits in British Columbia and elsewhere. In 1905 he was elected Liberal member for Calgary in the Alberta Legislature; and in the same year, when the government of Alberta was organized with Alexander Cameron Rutherford as Premier, Cushing became Minister of Public Works, retaining that position until 1910. He was the first Canadian to make ownership of telephones a part of government policy.

CUSHMAN, ALBERTON SEWARD (1867-). An American chemist, born in Rome, Italy, and educated at the Worcester Polytechnic Institute, at Freiberg, and at Heidelberg, Harvard, and Johns Hopkins universities. He was associate professor of chemistry at Bryn Mawr College in 1900-01, associate director of the Office of Public Roads, United States Department of Agriculture, for eight years, and then (1910) founded and became director of the Institute of Industrial Research. He is author of *The Corrosion and Preservation of Iron and Steel* (1910), and of the following bulletins of the Department of Agriculture: *The Useful Properties of Clay* (1904); *The Decompositions of the Feldspars* (1907); *The Use of Feldspathic Rocks as Fertilizers* (1907); and also a bulletin of the Institute of Industrial Research, *The Preservation of the Exterior of Wooden Buildings* (1911).

CUSHMAN, kush'màn, CHARLOTTE SAUNDERS (1816-76). A celebrated American actress, best remembered perhaps for her acting of Meg Merrilies in Scott's *Guy Rannering*. She was born in Boston, July 23, 1816, of Puritan descent, and was the eldest of five children left poor with their mother by the early death of their father, a West India merchant. She had, however, a fine contralto voice, which she cultivated, and in 1835 she made her appearance as an opera singer in the *Marriage of Figaro*. Her prospects were bright, when shortly afterward in New Orleans her voice suddenly failed. She was greatly disheartened, but, at the request of a tragedian (Mr. Barton), she undertook her first dramatic part, Lady Macbeth, which became one of her greatest rôles. Long afterward Lawrence Barrett said of her: "To the last she was the greatest Lady Macbeth of her age." She played for a time in Albany and elsewhere, and then began at the Park Theatre, New York, an engagement which lasted for several years. She took a great variety of parts, both comedy and tragedy, among them Bianca, Helen McGregor, Queen Gertrude, Goneril, Nancy Sikes, her wonderful Meg Merrilies, and later, Queen Katharine, Cardinal Wolsey, Ophelia, Lady Teazle, and many others. In 1844, after a period of successful management in Philadelphia and a tour with Macready, whom she had supported before, she went to England. She met with great success; while there she and her sister Susan made their first appearance in *Romeo and Juliet*, which had, for that period, an exceptionally long run in London. She returned to America in 1849, but revisited Europe several

times. In 1856 she went to Rome, where she had a home for some years. She was honored in the most cultivated society of Europe and America, not only as a great artist, but as a good woman. During the Civil War she showed her patriotic spirit by giving performances for the benefit of the Sanitary Commission, contributing in this way over \$8000. In her later years she was known as a reader, with singular interpretative powers. Her last appearance on the New York stage, Nov. 7, 1874, was a memorable occasion. She played Lady Macbeth. When the curtain fell, a body of eminent citizens, with William Cullen Bryant as spokesman, came upon the stage and presented the actress with a laurel crown, inscribed C. C.—*Palmar qui meruit ferat*. Charlotte Cushman never married. She died in Boston, Feb. 18, 1876. In 1880 her grave in Mount Auburn was marked by an obelisk which in form is a copy of Cleopatra's Needle as it stood in Helopolis. Consult: Stebbins, *Charlotte Cushman Her Letters and Memories of her Life* (Boston, 1878); Clement, *Charlotte Cushman* (ib., 1882); Cook, *Hours with the Players* (London, 1881); W. T. Price, *A Life of Charlotte Cushman* (New York, 1894); H. A. Clapp's *Reminiscences of a Dramatic Critic* (Boston, 1902).

CUSHMAN, ROBERT (c.1580-1625). One of the founders of the colony at Plymouth, Mass. He was born in Kent and arranged the emigration of the Pilgrims to Holland, later following them to Leyden. He accompanied Deacon Carver upon his fruitless mission to London (1617), assisted Brewster in obtaining a patent from the King (1619), and, together with Carver, chartered the *Mayflower*. He emigrated to New England with his son Thomas in 1621 in the ship *Fortune* and, leaving him there in the care of Governor Bradford, returned to Europe three weeks later to act as the agent of the colonists in London. The celebrated sermon on "Sin and the Danger of Self-Love," delivered by him before his departure, is memorable as being the first published discourse delivered at Plymouth and is the oldest sermon extant delivered in America. It was printed in London in 1622 and in Boston in 1724 and 1780. The strip of territory on Cape Ann secured by him and Edward Winslow in 1623 afterward became the site of the first successful settlement established within the boundaries of the Massachusetts Bay Colony. Sixty facsimile copies of his famous sermon were published at Boston in 1870.

CUSINS, kûz'inz, SIR WILLIAM GEORGE (1833-93). An English composer, born in London. He sang in the chapel royal at the age of 10. Soon afterward he was sent to study under Fétis in Brussels and upon his return obtained the King's scholarship at the Royal Academy of Music. At the age of 16 he was appointed organist to the Queen's private chapel, and in 1867 he succeeded Sterndale Bennett as conductor of the Philharmonic Society, which position he retained until 1883. In 1875 he became examining professor at Queen's College, and in 1876 joint examining professor of scholarships at the National Training School of Music. In recognition of his services in behalf of art, he was knighted in 1892. The few but highly meritorious compositions which he wrote include: *Royal Wedding Serenata* (1863); *Gideon*, an oratorio (Gloucester Festival, 1871); *Masonic Prayers Set to Music*; *Responses to the Commandments*; *Te Deum*; pianoforte con-

certo in A minor, a violin concerto, a symphony, two overtures, a septet for woodwind instruments, some chamber music, and several songs.

CUSK. A fish of the cod family (*Brosme brosme*), frequenting rocky ledges in the North Atlantic, especially off the shores of Scandinavia and Newfoundland. It has much the same habits and characteristics as the cod and is more extensively used in northern Europe than in America, where it has never found favor in market. See Plate of ROCKFISH, SUNFISH, ETC.

CUSP (from Lat. *cuspid*, point, spear). In architecture, the point formed by the meeting of two small arches, or foils, decorating the intrados of an arch. From its simplest form in late Romanesque buildings, it was developed by the Gothic builders into a highly ornate feature of the tracery in windows and on walls. In the earlier forms the cusp was always a solid triangular projection; in the more elaborate form it inclosed a triangular opening (open cusp). The cusp, closed or solid, appears also in Hispano-Moresque and Indo-Moslem architecture. For illustration, see ARCH.

CUSPARIA BARK. See ANGIOSTURIA BARK.

CUSSET, kus'sâ'. The capital of a canton in the Department of Allier, France, on the Sichon, 2 miles northeast of Vichy (Map: France, S., II 2). It is an ancient town, dating from a convent founded in 886, which was created an abbey in the thirteenth century. It has interesting fifteenth and sixteenth century houses, and the Grosse Tour, now a prison, is a relic of the mediæval fortifications built by Louis XI, now replaced by boulevards, which surrounded the town. It is noted for its cold mineral springs and has manufactures of linen, chalk, textiles, oil, paper, confections, and baskets. Pop., 1901, 6598; 1911, 6941. Consult Giraudot, *Topographie physique et médicale de Cusset*.

CUSSO. See KOOSSO.

CUST, LIONEL (1859-). An English author and art critic. He was born in London and was educated at Eton and Cambridge. In 1882 he entered the War Office and two years later was appointed assistant in the department of prints and drawings in the British Museum. He was director of the National Portrait Gallery from 1895 to 1909, when he became director of the National Gallery, and after 1901 he was also surveyor of the King's pictures and works of art. His publications include: *Index of Artists Represented in Department of Prints and Drawings in British Museum* (part i, 1893; part ii, 1896); *Albrecht Dürer, a study of his Life and Art* (1897); *The Master "E. S." and the "Ars Moriendi"* (1898); *A History of Eton College* (1899); *Van Dyke's Chatsworth Sketch-Book* (1901); *Anthony Van Dyck* (1903); *Angelo Bastiani: A Story of Modern Venice* (1904); *The Bridgewater House Gallery* (1904); *The Royal Collection of Paintings, Buckingham Palace* (1905); *Eton College Portraits* (1909); *Anthony Van Dyck, a Further Study* (1911); *Notes on Pictures in the Royal Collections* (1911); *History of the Society of Dilettanti* (1898; 1914).

CUST, ROBERT NEEDHAM (1821-1909). An English Orientalist. He was born at Cockayne Hatley, Bedfordshire, was educated at Eton, and, entering the East Indian service, took honors in the College of Fort William, Calcutta, for skill in four Oriental languages. For many

years he served with the military in various parts of India, took part in several battles, and was present at the taking of Lahore in 1846. He also took an active part in the pacification of the Punjab after the Sepoy Mutiny in 1858. After his return from the East he filled various local offices and became a member of several societies. He died on Oct. 28, 1909. Among his 60 works are: *Modern Languages of the East Indies* (1878); *Modern Languages of Africa* (1883); *Modern Languages of Oceania* (1887); *Modern Languages of the Caucasian Group* (1887); *Modern Languages of the Turki Branch of the Ural-Altaic Family* (1889); *Linguistic and Oriental Essays* (5), seven series (1880-1904); *Clouds on the Horizon* (1890); *Life Memoir* (1899).

CUSTANCE. See CONSTANCE.

CUSTARD APPLE. A common name in the West Indies and other tropical countries for several fruits of the genus *Anona* of the family Anonaceæ. Some of the fruits of this genus are among the most delicious produced in tropical countries, as the cherimoyer (q.v.), and even the common custard apple (*Anona reticulata*) of the East and West Indies. The custard apple is a large, dark-brown, roundish fruit, sometimes from its size and appearance called "bullock's heart" in the West Indies; the tree is of considerable size. The custard-apple family is represented in the northern United States by the common pawaw (*Asimina*, now *Uvarea*, *triloba*). There are two or three which are natives of western Africa. To the genus *Anona* also belong the sweetsop, the sour-sop, the pinana, or pinha, all of them tropical American fruits, and the alligator apple of the West Indies (*Anona palustris*), a fruit which in its present unimproved state is probably not worth cultivation. Quite recently plant breeders have been giving increased attention to this group of fruits, with the view of extending their commercial culture to semitropical sections of the United States and elsewhere. A number of species are now being grown to a small extent in southern Florida and California.

CUSTER, GEORGE ARMSTRONG (1839-76). An American soldier, born in New Rumley, Harrison Co., Ohio. He graduated at West Point in 1861, was assigned as a second lieutenant to the Fifth United States Cavalry, and arrived at the front on the day of the first battle of Bull Run. He served successively as an aid on the staffs of Generals Phil Kearny, William F. Smith, and McClellan, was promoted to be a captain of volunteers, and served throughout the Peninsular campaign of 1862. In June, 1863, he was made a brigadier general of volunteers, and was placed in command of a brigade of Michigan volunteer cavalry, which under his leadership became one of the most efficient and best-trained bodies of cavalry in the Federal army. At the head of these troops he distinguished himself at the battle of Gettysburg. His brigade was then attached to Sheridan's cavalry corps, with which he served in the campaigns in Virginia in the spring and summer of 1864 and the subsequent operations in the Shenandoah valley. Placed in command of the Third Division of Sheridan's corps, he won a victory at Woodstock and distinguished himself at the second battle of Winchester (Cedar Creek). He was brevetted major general of volunteers on Oct. 19, 1864, for his services, defeated General Early at Waynesboro, and took

part in the battles of Five Forks, Dinwiddie Courthouse, and other engagements of Grant's last campaign. After several months' service in Texas during the winter of 1865-66, he applied for leave of absence, in order to accept the offer which had been made him to take command of the cavalry which Juarez was organizing to drive the Emperor Maximilian out of Mexico. His request being denied, he accepted the position of lieutenant colonel of the Seventh Cavalry. In 1867-68 he gained his first experience as an Indian fighter in Gen. W. S. Hancock's campaign against the Cheyennes, bringing the campaign to a successful conclusion by a decisive defeat of the Indians at Washita, Ind. Ter., in November, 1868. From 1871 to 1873 he was stationed with his regiment in Kentucky. In the spring of the latter year he was ordered to Dakota Territory to protect the surveyors of the Northern Pacific Railway while locating that line through the Indian country west of the Missouri River. The discovery of gold in the Black Hills led to an influx of white gold seekers into land belonging to the Sioux, and during the next three years Custer and his command saw considerable active service in the Black Hills country and along the valley of the Yellowstone. In the spring of 1876 General Sheridan planned a campaign against the Indians which he hoped would be decisive. Three expeditions were set under way, with the expectation that they would meet and act in conjunction against Sitting Bull and his force of about 6000 Indians, who were supposed to be encamped somewhere near the juncture of the Rosebud and the Yellowstone. General Crook, with 1000 troops, was to advance northward from Fort Laramie. General Terry, with a similar force, was to march westward, and General Gibbon, with 450 men, was to come down from the northwest. Custer and his regiment of 624 strong formed part of General Terry's force. On June 17 Crook, feeling his way along the Yellowstone, came upon Crazy Horse and some hundred of his braves on the Rosebud and engaged them in a sharp but indecisive struggle. Terry and Gibbon had meanwhile effected a junction on the Yellowstone, at the mouth of the Big Horn, without encountering Indians in any number. After their engagement with Crook on the Rosebud, Crazy Horse and Sitting Bull led their forces in a southwesterly direction, until they were directly south of Terry and Gibbon, where they set up their tipis on the west bank of the Little Big Horn. This new move of the Indians was discovered by scouts sent out by Terry, who immediately determined to march upon them. Terry, having no intimation of Crook's defeat, sent Custer with the Seventh Cavalry scouting up the Rosebud to locate the enemy. He himself went to the mouth of the Big Horn with steamboats to ferry Gibbon's men across the river and planned to rejoin Custer at the junction of the Big Horn and Little Big Horn. But on June 24, Custer's scouts informed him that the enemy was located on the west bank of the Little Big Horn. He supposed that there would not be serious opposition from one Indian village, and although he did not know the strength of the enemy, prepared to attack. In the hope of trapping the Indians by strategy, he formed his troops into three divisions. He kept with himself five companies, with which he planned to attack that part of the village that lay directly before him, dividing the remaining six companies between Major Reno and Captain Benteen, the

latter being sent two miles to the southward, while Reno advanced midway between Benteen and Custer. Thus fatally divided, the Seventh Cavalry advanced to the attack of an enemy greatly outnumbering them. Benteen's advance took him far south of the village. Reno's rather spiritless attack led him against the south end of the village, where he was repulsed and driven back across the river to the shelter of a protecting bluff. Custer and his five companies dashed almost at the centre of the Indians, were driven back and surrounded, but fought on desperately until the entire command of 208 men were killed. The engagement lasted perhaps not more than twenty minutes. Reno lost 56 officers and men. Neither Sitting Bull nor Rain in the Face were in this battle. The bodies were found the next day, when Terry's troops relieved the reunited forces of Benteen and Reno, who had been holding their position on the bluffs with difficulty. Custer was one of the bravest, most daring, and dashing soldiers America has produced, but he undoubtedly allowed his impetuosity to get the better of his judgment. He was the author of *My Life on the Plains* (1874). Consult Whittaker, *Life of General George A. Custer* (New York, 1876); *Report of the Secretary of War and Accompanying Papers* (Washington, 1876). General Custer's wife, ELIZABETH BACON CUSTER, whom he married in 1864, accompanied him in many campaigns, and published the following books: *Boots and Saddles, or Life with General Custer in Dakota* (1885); *Tenting on the Plains* (1887); *Following the Gideon* (1891).

CUSTINE, ku'stèn', ADAM PHILIPPE, COMTE DE (1740-93). A French general, born at Metz. He served with distinction in the Seven Years' War. As colonel of the infantry regiment "Saintonge," and quartermaster-general of the French troops, he took part in the Revolutionary War and was present at the surrender of Yorktown. He was a member of the States-General in 1789. In 1792 he became commander of the Army of the Lower Rhine and conducted the brilliant campaigns against Spicker, Worms, and Mainz. In consequence of his failure, in the campaign of 1793, to relieve Mainz, after it was recaptured by the Allies, he was suspected of negotiations with the enemy and was accused of treason and executed. His soldiers idolized him, calling him "Général Moustache."

CUSTINE, ASTOLPHE LOUIS LÉONARD, MARQUIS DE (1790-1857). A French author, grandson of the preceding, born at Niederwiller, Lorraine. He wrote a play and several romances, but is most celebrated for his descriptions of travels in his *Mémoires et voyages* (1820). The most amusing of his books of travels is *La Russie en 1839* (1843). His correspondence with Varnhagen von Ense was published in 1870.

CUSTIS, GEORGE WASHINGTON PARKE (1781-1857). An American author, the adopted son of George Washington. He was born at Mount Airy, Md., a grandson of Martha Washington, his father being her son by her first husband. Custis studied at Princeton and St. John's colleges, married Mary Lee Fitzhugh, and in 1802 went to reside on an estate of 1000 acres at Arlington, near Washington. His daughter, Mary Randolph Custis, married Robert E. Lee, the Confederate general. The grand estate was confiscated by the government and is now the

Arlington National Cemetery. Besides orations and plays, he left *Recollections of Washington* (1860).

CUSTOM (OF. *costume*, Fr. *coutume*, It. *costuma*, ML. *custuma*, *costuma*, from Lat. *consuetudo*, habit, from *consuere*, to grow accustomed, from *consuere*, to be accustomed, from *con-*, together + *suer*, to be accustomed; probably from *suus*, Gk. *éōs*, *heos*, *ēs*, *hos*, Skt. *sva*, Av. *hva*, one's own). One of the three great departments of social psychology (q.v.), coordinate with language and myth (qq.v.). It may be defined as "any norm of voluntary action which has been developed in a national or tribal community." (Wundt.) Like animal instinct (q.v.), it is the outgrowth of individual habits. But instinct is practically invariable, it expresses the habits of past generations in the form of mechanized, not of consciously motivated, actions, whereas custom, however rigorous its prescriptions, may always be disobeyed or modified; the customary action has not lost its conscious antecedents. Hence we may say that "instinct is habitual conduct that has become mechanical; custom, habitual conduct that has become generic."

The origin of custom appears to have been twofold. In the great majority of cases in which we are able to trace a custom back towards its first beginnings we come upon religious or ceremonial ideas. In certain other cases custom seems to have originated in ancient rules of law, the meaning of which has been forgotten, while the usage which they enjoin still persists; although, when we consider that every action of importance in a primitive society, whatever its special significance, has a religious aspect, we shall probably not be wrong in referring these legal customs also to an ultimately religious source. As an illustration of legal custom we may cite the Greek and Roman marriage ceremony, in which it was an established tradition that the mothers of the contracting families should bring the bride and groom together—a clear indication of that law of mother right which the civilized societies of the ancient world had long outgrown. But the mother right is itself permeated through and through with primitive mythological conceptions, so that we are in this case thrown back with practical certainty upon a religious origin of the custom. As an instance of the transformation by custom of the purpose of a religious ceremonial, we may take the funeral feast. In primitive times the "funeral baked meats" were furnished forth as a sacrificial feast; the mourner seeks in part to obtain the favor of the gods for his dead and in part to offer worship to the dead man himself. Later the feast becomes a meal shared in all piety with the dead, the survivors symbolize their brotherhood with the departed by partaking of the meat which is to sustain him on his pilgrimage to the other world. Nowadays the cake and wine may be offered quite perfunctorily, or may bring so much of comfort to the mourners as springs from the conviction that they have dealt handsomely with the dead, or may serve as an excuse for ill-timed carousals. In any event it has completely lost its primary significance and has persisted only by virtue of that *vis inertiae* which makes custom at large so valuable a mine of information to the anthropologist and social psychologist.

Consult: Wundt, *Ethics* (London, 1902);

id., *Volkerpsychologie* (Leipzig, 1911); id., *Elemente der Völkerpsychologie* (ib., 1912); Tylor, *Primitive Culture* (London, 1903); id., *Early History of Mankind* (ib., 1878); id., *Anthropology* (New York, 1905). See ANTHROPOLOGY. For the legal aspect of custom, see the following article.

CUSTOM. In the legal sense, a usage which has obtained the force of law and which will, accordingly, be enforced by the courts. As is explained in the article on CUSTOMARY LAW, the greater part of the legal rules enforced by society are the expression of customs, and custom continues to be an important, though diminishing, source of law in civilized as well as in primitive society. Indeed, it is only in the progressive communities, where the constantly accelerating progress multiplies social needs faster than they can be supplied by the slow processes of custom, and where the political consciousness has kept pace with this progress, that conscious legal development by legislation and judicial action tends more and more to supplant the unconscious development of customary law. In the nonprogressive societies, which vastly outnumber the progressive, custom is still the principal, if not the only, source of law.

English and American law writers distinguish between *general* and *particular* customs, the former being of general observance and constituting the body of the common law, and the latter being restricted to the inhabitants of a particular district or the members of a certain calling. As an example of the former may be cited the right of the public to use the seashore, between high and low water mark, for landing and other lawful purposes; and, as an example of the latter, the right of persons engaged in the business of towing, on some parts of the river Thames, to go upon the banks of the river for that purpose, though the land is the private property of abutting proprietors. There is, in truth, and from the point of view of jurisprudence, no distinction between the two classes of customs, both depending alike upon immemorial usage, and both, when established, having equally the force of law. In practice, however, the common-law system has made a distinction between them for the purpose of establishing them, the courts taking "judicial notice" (q.v.) of general customs as a part of the common law which it is their business to interpret and declare, but requiring proof of the existence of local or other particular customs. But the line between the two classes is not very accurately drawn, the custom of the County of Kent, known as "gavelkind" (q.v.), whereby lands descend to all of the sons equally instead of to the eldest only, and the still more curious custom of "borough English" (q.v.), under which lands descend to the youngest son in preference to his elder brothers, and which is confined to no particular area, but affects isolated estates or manors in various parts of England, being recognized as parts of the common law, notwithstanding their limited occurrence. Doubtless these exceptional cases are to be explained by the great antiquity of the customs in question and their early recognition by the courts. Of a similar character is the *lex mercatoria*, or custom of merchants, which, though applying only to a limited class in the community, has also become incorporated in the common-law system and is noticed by the courts without special proof of its terms.

In order that a particular or local usage, alleged to be a custom, shall have the force of law, (1) the practice "must have been used so long that the memory of man runneth not to the contrary"—i.e., as the phrase is understood in England, from the accession of Richard I (1189); (2) it must have been continued without interruption; (3) it must have been peaceable and acquiesced in, not subject to contention and dispute; (4) it must be definite and certain; (5) it must be reasonable. The question of the reasonableness of a custom is often one of great difficulty. It has been decided that any usage relating to land which is destructive of the land itself, or which deprives the owner of the beneficial use of it, is unreasonable. Thus, a custom for all the inhabitants of a village to play games or walk for recreation on private property has been held to be reasonable, while a custom for all the inhabitants of a village to pasture cattle on private land is, in its turn, unreasonable. As usually stated, the rule is that a right in the nature of an *easement* may arise by custom, but not a right in the nature of a *profit*.

It is doubtful whether local or particular customs can arise generally in the United States. It has usually been assumed that the common-law rules above set forth are in force in this country, and a few States have so held. It has, on the other hand, been decided in New Jersey and Virginia that no rights in another's land can arise by custom, and the decisions have been put upon the ground that there is in the United States no possibility of a usage having the requisite antiquity (i.e., of dating from the reign of Richard I) to give it the standing of a custom enforceable at law.

The courts sometimes make a further technical distinction between local or particular *custom* and *usage*—the former being of compulsory legal effect, and the latter consisting of current practices, to which parties may or may not conform, and in accordance with which they are supposed to have regulated their conduct or agreements. Thus, in matters of contract, a usage affecting the trade or calling with which the contract has to do may be dealt with as an understood but unexpressed term of the agreement, and in matters of tort, as an allegation of negligence, the usage of the community (as, e.g., the so-called "rule of the road") may be called into play to determine the presence or absence of negligence. Consult: Blackstone, *Commentaries on the Laws of England*; Holland, *Elements of Jurisprudence* (9th ed., London, 1900); Holmes, *The Common Law* (Boston, 1881); Pollock and Maitland, *History of English Law* (2d ed., ib., 1899); Gale, *Treatise on the Law of Easements* (7th ed., London, 1899); Jones, *Treatise on the Construction or Interpretation of Commercial and Trade Contracts* (New York, 1886). See COMMON LAW; CONTRACT; EASEMENT; LAW; PROFIT.

CUSTOMARY FREEHOLD. In English law, a variety of copyhold tenure, sometimes called "privileged copyhold" which differs from the common form of that tenure in that it is not expressed to be "at the will of the lord." It is not a true freehold, however, the freehold title being actually vested in the lord of the manor. As the title indicates, this form of tenure owes its origin to the local custom of a manor or borough. It is of infrequent oc-

currence in England and has never existed in the United States. See COPYHOLD, and the authorities there referred to.

CUSTOMARY LAW. The body of customs recognized as binding in any social group or community and enforced by its authority. As, in the evolution of humanity, social habits or customs precede the definite organization of social groups, such an organization, when it arises, finds a body of customary observances ready to be transformed, and in process of being transformed, into positive law. This body of customs constitutes the entire legal system of primitive society, and the development and recognition of new customs and the modification of old customs are its principal, if not its only, means of expansion and change. Indeed, the primitive codes—as the Mosaic law of the Jews, the laws attributed to Lycurgus among the Greeks, the Twelve Tables of Rome, and the more recent barbaric codes (*leges barbarorum*) of the early Middle Ages—represent little more than a statement, in precise and definite form, of the body of custom which had already gained the force of law in the community. It is only when a community has reached the stage of political consciousness that it undertakes deliberately, by legislation or judicial methods, to effect changes in its laws, and even then custom, though relatively diminishing in importance, continues to be an important source of new law.

Customary law, then, is the foundation and basis of all existing legal systems. Of many, if not most, of those systems it constitutes by far the greater portion of the body of rules of which they are composed, and in all of them it forms an important increment of their growth. Even where the political and legal consciousness of a community has reached the stage of sweeping legal reform—as in the Eastern Empire under Justinian and in France under Napoleon Bonaparte—the resultant code of laws, however comprehensive, must be based upon, and must consist mainly of, the rules of the customary law which it is intended to supersede, and its most radical departures from that law are most swiftly corrected by the judicial organs of the community. Undoubtedly the most complete and widespread transformation which the customary law of mankind has ever undergone was the general reception throughout Europe of the civil-law system of Rome. (For the history of this process, see CIVIL LAW.) Only the common-law system of England, upon which that of the United States is based, was able to withstand that influence; and this is still, for the most part, consciously and avowedly a body of customary law. (See CODE; COMMON LAW.) Under the influence of the spirit of nationality, which has so powerfully affected the nations of Europe during the last quarter of the nineteenth century, there has recently developed a strong sentiment in favor of the revival of the local customary law, as against the more general law of foreign origin. This is particularly noticeable in the recent revision of the German codes.

Consult: Maine, *Ancient Law* (11th ed., London, 1887, or any other edition), and *Lectures on the Early History of Institutions* (6th ed., ib., 1893); Lee, *Historical Jurisprudence* (New York, 1900); Blackstone, *Commentaries on the Laws of England*, book i, pp. 63-84; Bryce, *Studies in History and Jurisprudence* (New

York, 1901); Holmes, *The Common Law* (Boston, 1881); Pollock and Maitland, *History of English Law* (2d ed., ib., 1899).

CUSTOMHOUSE. The office in a port of entry (seaport or lake port) where masters of ships are bound to enter and clear their vessels according to the statutes governing the subject, and where importers of merchandise must pay customs duties. In the United States the customhouse of each port is under the direction of a collector of the port, appointed by the President with the advice and consent of the Senate. He is responsible for its proper conduct, subject only to the direction of the Secretary of the Treasury, and it is his duty to carry out the United States statutes and tariff laws governing and restricting the importation of foreign goods. See CUSTOMS DUTIES.

CUSTOM OF THE COUNTRY, THE. The title of a play by Fletcher and Massinger (about 1628), in part taken from Cervantes. A play by Mrs. Centlivre, with the same title, was produced in 1715.

CUSTOMS DUTIES. Taxes levied upon merchandise which passes a frontier, generally upon goods imported. Such taxes are of very early origin, and in the long conflict between the English King and the Commons over the right of taxation it was claimed that these taxes were ancient customs over which Parliament had no jurisdiction. Hence the name which has since clung to this class of taxes. It appears that in their origin such taxes were largely in the nature of payments for privileges of trading at certain places and for use of the facilities of ports and markets, but that they soon passed beyond the stage of fees into that of imposts. The name "customs duties" was applied indifferently to the taxes levied at ports of entry or at ports of passage or upon goods brought into a city from surrounding parts of the same country. Such internal customs have almost disappeared in modern countries, though remnants of them are found in the "octroi" of Paris and other continental cities. Transit taxes, such as those levied upon the navigation of the Rhine, have also disappeared. Such restrictions upon the freedom of commercial intercourse would no more be tolerated in modern times than the tributes once paid to the Barbary pirates.

Taxes upon exports have become infrequent. They are no longer an element of consequence in the fiscal system of modern states, though a few remnants of them can be found. In South America such taxes are more common. Chile derives considerable revenue from its nitrate exports, and Brazil from its coffee exports. Quite striking, as a return to older forms of taxation supposed to be laid aside, was the imposition in 1901 of a tax of one shilling per ton upon all coal exported from Great Britain.

Customs duties are, therefore, generally synonymous with duties upon imports. Such duties may have no other object than to raise revenue. The most conspicuous case of such a purely fiscal tax is when the imported article is taxed to exactly the same extent as the home product, such a tax aiming to equalize the conditions of competition for the foreign and the home producer. Another distinctly fiscal tax is one imposed upon an article not produced in the home country, as the English duty upon tea. Taxes which weigh more heavily upon the foreign article than the home product, or which

are levied upon imports where the same article is not taxed at home, may be purely fiscal in intent or may be designed as a protection for home industries. It is not the magnitude of the taxation which decides this point, but the effect upon the economic order. It is well understood that any taxation whatever influences consumption and production, but this influence may be deliberately planned or incidental. It is the deliberate planning which characterizes a protective tariff. Whether such a course is to be justified is not to be discussed here. (See FREE TRADE; TARIFF.) It is enough for our purpose to note that the injection into tariff legislation of ulterior economic motives complicates the machinery of customs duties in a high degree. Such a course does not eliminate the fiscal features of a tariff, as there are few states which can afford to handle their customs taxation in such a way as entirely to subordinate fiscal interests to economic policy.

The contrast between a purely revenue tariff and a protective tariff is illustrated most strikingly by comparing the United States and Great Britain. In the latter the general principle is freedom from taxation, duties being laid upon a few articles only, 27 in all. In the United States the general principle is taxation, and all articles not specifically taxed at rates named, or expressly exempt from taxation, are subject to a duty of 10 per cent if unmanufactured and of 15 per cent if manufactured in whole or in part. The articles subject to tax, by the tariff law of 1913, fall under 386 paragraphs, divided into schedules lettered from A to N. The following table indicates the nature of these schedules and the paragraphs under each. The free list embraces 271 paragraphs.

SCHEDULES	Paragraphs fixing rates
A. Chemicals, oils, and paints	70
B. Earthen, earthenware, and glassware	41
C. Metals, and manufactures of	66
D. Wood, and manufactures of	9
E. Sugar, molasses, and manufactures of	4
F. Tobacco, and manufactures of	5
G. Agricultural products and provisions	51
H. Spirits, wines, and other beverages	13
I. Cotton manufactures	17
J. Flax, hemp, and jute, and manufactures of	19
K. Wool, and manufactures of	25
L. Silks and silk goods	9
M. Pulp, paper, and books	13
N. Sundries	54

Customs duties are specific and ad valorem—the former being reckoned by the quantity of the goods imported (weight, measure, or number), and the latter by the value. Theoretically, the ad valorem duties are the preferable, as they adjust the amount of the burden to the value of the article. But they offer great practical difficulties in ascertaining the value of the goods. As the statements of the importers, even when made under oath, are not accepted as final evidence as to the value of the goods, a complex machinery for the ascertainment of values is a necessary adjunct to all ad valorem taxes. Hence the preference for specific duties, which can be imposed readily according to the physical characteristics of the objects imported. Such specific duties fall unequally upon objects of high value and low value in the same class. Thus, if all textiles were taxed 15 cents a square yard, such a tax would be prohibitive on print

cloths, but insignificant upon silks. It is the plaint of the protectionist that specific duties protect only the lower grades of goods from foreign competition. The only method of mitigating this is to make a minute division into classes. The greater convenience of administration has produced a general sentiment in favor of specific duties, but nations which pursue an avowedly protectionist policy cannot yield to this sentiment as largely as those whose tariff is for revenue only. Specific duties can best be applied when the product is comparatively uniform in quality and value. In Great Britain, Germany, and Austria, only specific duties prevail, and the tariffs in France and Italy show very few ad valorem rates.

With these countries the United States stands in marked contrast. Here ad valorem rates are abundant, but the provisions of the act are so complex that a separation of rates into two classes only is not practicable, and it has become necessary to add a mixed class. This includes several cases: (1) when two articles are named in the same paragraph, one receiving an ad valorem and the other a specific tax; (2) where one article receives both forms of tax; (3) where an article is classed according to value and then receives a specific tax for each class. Other combinations also occur, as where an article is classed according to value and receives a different ad valorem rate in each class, or again when classed according to specific characteristics and taxed at different ad valorem rates, but these combinations are classed as ad valorem rates. Specific rates predominate in the schedules A, C, F, G, and H, but in the others ad valorem and mixed rates prevail.

Consult: United States Tariff Law of 1913, Annual Reports of Commerce and Navigation; Statistical Abstracts of the United Kingdom and of the principal foreign countries. See FREE TRADE; TARIFF; TAX.

CUSTOMS OF WAR. See WAR, HONORS OF WAR, SALUTES, LAWS AND USAGES OF WAR.

CUSTOS ROTULORUM (Lat., keeper of the rolls, or records). An office of great antiquity and dignity in England. It is usually held by the first civil officer of the county, as the Lord Lieutenant, though the actual custody of the records of the sessions of the peace and of the commission of the peace, constituting by emence "the rolls" of the county, is vested by statute in the clerk of the peace. Formerly the office was filled by appointment of the Lord Chancellor, but it has for over 300 years been conferred by the crown. The Keeper of the Rolls is always one of the commission of the peace, though the title of the office points to ministerial rather than to judicial functions.

CUSTOZZA, koo-stód'za. A village in the Province of Verona, North Italy, situated 11 miles southwest of Verona (Map: Italy, E 2). On July 25, 1848, and on June 24, 1866, the Italians were defeated here by the Austrians. (See ITALY, History.) In 1879 a monument was erected to the fallen. Consult Mathes von Bilabruck, *Taktische Studie über die Schlacht von Custozza im Jahre 1866* (Vienna, 1891).

CUSTREIN, ku-strén'. See KÜSTREIN.

CUTANEOUS SENSATIONS (Fr. *cutané*, Portug. It. *cutaneo*, from Lat. *cutis*, skin). The sensations aroused by stimulation of the skin and of the superficial mucous membrane. The skin has been credited, in one or another psy-

chological system, with a large number of sensations: sensations of contact, pressure, impact, movement, resistance, weight, touch; hardness, roughness, wetness, and their opposites; warmth, heat, cold; pain, tickling, goose flesh, pricking, tingling, creeping. (See COMMON SENSATION.) When, however, the organ is explored, point for point, by mechanical, thermal, and electrical stimuli, it proves to be capable of four sensation qualities, and, as far as investigations have gone, of four only: pressure, warmth, cold, pain. The so-called sensations of dryness, weight, resistance, touch, smoothness, etc., have proved to be perceptions, made up of sensations from the skin and from the underlying tissues. Pricking, tingling, etc., are in all probability circulatory sensations, aroused by change of blood flow or blood supply; their organs and mode of excitation are imperfectly known. We shall return to heat and tickling below; we now take up the cutaneous qualities in order.

1. *Pressure*.—If a small point of cork or soft wood be set down firmly upon the skin surface, e.g., on the back of the hand, one of two things will happen: either it will arouse a dull, vague, diffuse pressure sensation, or it will arouse a sharp, distinct pressure, the kind of sensation that one might suppose to come from the inward pressure of a little hard seed lodged in the cutis. (Goldscheider.) If the point be now applied lightly, we get either no sensation at all, or (at the place where the seed pressure was before produced) a light, fine, rather ticklish pressure sensation. The seed pressure, which, however, probably involves subcutaneous in addition to the cutaneous organs, and the ticklish pressure come from the organs of the pressure sense, the "pressure spots" as they are called. The dull pressure with intensive stimulation is set up by the indirect affection of several pressure spots; the stimulus makes an indentation in the skin, and the dragging down of the tissue squeezes the pressure organs that lie about the point of application. The absence of sensation with light contact means that the experimenter has applied the stimulus at a point of the skin which has no pressure organ. We see then, from this simple experiment, that the skin is not uniformly sensitive to pressure, it may rather be compared to a mosaic of tiny blocks, some of which are sensitive, while the rest are insensitive, to mechanical stimulation.

A careful exploration of the cutaneous surface, undertaken with the object of mapping the pressure spots, has led to two definite results. (a) If the portion of the skin explored is hairy, the pressure spot lies always to windward of a hair shaft, immediately above a hair bulb. It follows that the nerve skin which enfolds the bulb is the terminal organ of pressure, and that the hairs are as truly sense apparatus in man as they are, e.g., in the cats. (b) If the region is hairless, pressure spots, arranged in lines and groups, can still be identified. The organs in this case are the corpuscles of Meissner.

2. *Warmth and Cold*.—If the blunt point of an ordinary lead pencil be drawn slowly over the back of the hand, it will give rise, from time to time, to little flashes of cold; over the rest of its course it will arouse nothing but pressure sensations. If the point be warmed, and drawn in the same way over the closed eyelid, it will give rise, from time to time, to little dots of warm sensation; at other points it excites nothing but pressure. There is, then, a mosaic of

temperature organs as there is a mosaic of pressure organs. Moreover, if a small square or circle of skin is accurately marked, and explored twice over, once with a cooled and once with a warmed point of metal, it will be found that the cold and warm organs do not coincide. A cold organ never gives a warm sensation; a warm organ never responds to stimulation by a cold sensation. While, therefore, we are justified, physically, in speaking of "degrees" of temperature, and in arranging "warms" and "colds" upon a single thermometric scale, we must recognize the fact that, psychologically regarded, warmth and cold are distinct things; there are two temperature senses, each with its own distribution and its peculiar terminal organs. The organs of cold are more numerous than those of warmth. They are to be found, perhaps, in the end bulbs of Krause, and the organs of warmth in the cylinders of Ruffini (von Frey). All these cutaneous organs are of extremely simple structure, consisting of little more than a skein or tangle of nerve fibrils, twined about a cluster of connective-tissue cells. All alike are readily fatigued; and all show differences of responsiveness or "attunement"—some answering a given stimulus with an intensive, others with a weak, sensation.

3. *Pain*.—If a small area of skin, say, upon the back of the hand, be shaved, moistened, stretched taut, and explored, point for point, by a fine horsehair or needle, sensations of pain—more closely distributed than any of the three preceding sensations—will be obtained. The pain sensations are the most delicate—the smallest, so to speak, of all the skin sensations. The pain quality is unmistakable, even a novice will have no difficulty, after the first few trials, in distinguishing it from the ticklish quality of fine pressures. Moreover, it can be elicited independently of the pressure sensations. Hence there can be no doubt that pain is a new, fourth sense, endowed with organs of its own.

These organs are, in all probability, the free nerve endings in the epidermis. The epidermis lies, like a layer of stiff leather, upon the elastic cutis. When, then, the skin is lightly touched, the resulting vibration passes through the epidermis to the underlying cutis; the epidermis, with its organs, is not stimulated at all. When, however, the skin is bruised, so that the epidermis is actually broken or crushed; or when the epidermis is itself explored, under experimental conditions that render it accessible to stimulation—then the pain quality is evoked. The mechanical character of cutis and epidermis thus enables us to explain the apparently paradoxical fact that the pain organs are placed more superficially than the organs of pressure, and yet that, under ordinary circumstances, it takes less stimulation to call out pressure than to excite pain.

4. *Heat*.—We have seen that warm spots give only sensations of warmth, and cold spots only sensations of cold. It is remarkable that, while the cold spots do not as a rule respond to warm stimuli—as, indeed, we should not expect them to do—they respond, by a distinct cold sensation, to heated stimuli of some 45° C. or over (von Frey's "paradoxical cold"). On the other hand, warm spots may mediate a faint sensation of warmth in response to stimuli that are slightly cooler than the skin ("paradoxical warmth"); a very cold stimulus does not affect them. If a piece of metal, heated above 45°, be

laid upon a portion of the skin that is furnished with both cold and warm spots, the result of the combined excitations is not warmth, or cold, or pain, but what at first seems to be a new quality, that of heat. A good place for experimentation is the median line of the forehead, close up to the hair. Raise the temperature of the metal from 40° upward, by 1° steps. For the first few trials you get nothing but a mild warmth, from the warm spots. But as soon as you pass the critical temperature (the heat that, if the metal were a point, would evoke from a cold spot the paradoxical cold sensation), you get a distinct sense of heat. Thus psychophysically heat is a fusion, a mixture of the stimulus qualities warm and cold. To introspection it is apt to appear as a simple quality, but may, under repeated observation, yield to analysis.

5. *Ticking*.—The psychophysics of this sensation complex is also obscure. Ticking may be set up, at certain parts of the cutaneous surface, by light intermittent pressure or even by a single light touch. The resulting pressure sensations are (a) in some way diffused, so that the area of sensation presently becomes much larger than the area of original stimulation. Concomitant sensations of pressure (see COMMON SENSATION) may also be aroused in remote regions of the skin. It is possible (b) that the smooth muscle fibres at the roots of the hairs, the muscles that cause the hair to "stand on end" and whose contraction produces goose flesh, may contain sensory nerve endings which function in the ticking complex. (c) The occasional thrills of warmth which are characteristic of tickling are due, apparently, not to mechanical stimulation of the warm spots, but to a change of blood supply in the vessels of the cutis. Weak pressure or blowing upon the skin is known to increase the arterial blood pressure. (d) There is, in general, no reference to the stimulus, nor any definite visualization of the surface affected. (e) The movements of withdrawal have been ascribed to the unpleasantness of the intermittent stimulation; a flickering light, a beating tone, an interrupted pressure, are all disagreeable. While this statement may contain a part of the truth, it seems probable that the movements are referable, in part at least, to reflex connections between the sensory and motor nerves, akin to the connections which, on the purely sensory side, subserve concomitant sensation. Moreover, laughter is the direct motor response to tickling, and unpleasantness does not arise unless the stimulation be long continued. (f) For theories of the connection of laughter with tickling, see LAUGHTER.

For the sensitivity of the internal organs, including the alimentary canal, to pressure, pain, warmth, and cold, see ORGANIC SENSATIONS.

Bibliography. For a general account of experimental work upon the cutaneous "spots," consult: Wundt, *Physiologische Psychologie*, ii (Leipzig, 1910); Titchener, *Experimental Psychology* (New York, 1901); id., *Text-Book of Psychology* (ib., 1910); Sherrington, in Schäfer's *Text-Book of Physiology*, ii (Edinburgh, 1910). See PAIN.

CUTCH, or **KACHH**, *kūch* (Skt. *kaccha*, shore). A native state under the Presidency of Bombay, British India, occupying the peninsula south of Sindh, between the marshy tracts of the Rann, or Rann, of Cutch and the Gulf of Cutch. It covers an area of 7616 square miles, excluding the Rann of Cutch (Map: India, A 4).

Its soil is mostly sterile. The climate and meteorological conditions are extremely unfavorable for vegetation and rainfall is light. Its chief products are minerals and salt. The Rann is a morass of 9000 square miles in area. It is flooded during the monsoon by salt water, but by December 1 it is comparatively dry. Cutch has a feudal system of government, the ruling power being confined to the dynasty of Jharaja Rajput, of which there are about 200 members. Pop., 1891, 558,415; 1901, 488,022; 1911, 513,529. About one-third of the inhabitants are Mohammedans, the rest Hindus of various castes. Chief town, Bhuj.

CUTCH, or **KACHH GUNDAVA**, gūṇḍā'vā. A region in Baluchistan, east of Khelat. The Hala Range of mountains extends along the western frontier. The area is a desert, with an annual rainfall of but 3 inches, but the soil under irrigation yields bountiful crops of grain and cotton. The hot summer winds from the interior are not easily endured.

CUTCH, GULF OF. An inlet on the north border of the Arabian Sea, lying between Cutch and the peninsula of Kathiawar, British India (Map: India, A 4). It is about 30 miles wide and 100 miles long and connects at its upper end with the Little Rann (or Runn) of Cutch, and through this with the great western Rann, the remarkable salt marshes lying to the east and north of Cutch.

CUTHA, or **CUTHA**. An ancient city in Babylonia, identified by Rawlinson, Rassam, and Delitzsch with the present Tell Ibrahim, 25 miles N. E. of Babylon. It was connected with Sippara (Abu Habba) by a canal. The city is mentioned already by Sargon and Manishtusu. Its famous Nergal temple was built by Dungi of Ur, the zikkurat, or temple tower, was dedicated to Nannar, the moon god. One of the creation stories (see CREATION) came into Assurbanipal's library from Cutha. It remained an important religious centre until the time of Nabonaid. Men from Cutha were carried away, probably by Assurbanipal after 648, to Samaria (2 Kings xvii. 24) where they continued to worship Nergal (vs. 30). Hence the Samaritans were often spoken of in later times as Cuthaeans. In 1881 Hormuzd Rassam conducted for a few weeks excavations at Tell Ibrahim without noteworthy results. Consult Delitzsch, *Wo lag das Paradies* (Leipzig, 1881); Zehnfund, *Babylonien in seinen wichtigsten Ruinenstätten* (Leipzig, 1910). Ed. Meyer, *Geschichte des Altertums*, 3d ed. (Berlin, 1913).

CUTHBERT, kūth'bért. A city and the county seat of Randolph Co., Ga., 118 miles southwest of Macon, on the Central of Georgia and the Georgia, Florida, and Alabama railroads (Map: Georgia, B 4). It is the seat of Andrew Female College (M. E. So.), opened in 1854, and of Bethel Military College (for men). Fruit growing and farming are the principal industries, and there are fertilizer factories, cotton-compress and grist mills, cotton-oil mill, and gineries. The water works and electric-light plant are owned by the city. Pop., 1900, 2641; 1910, 3210.

CUTHBERT, SAINT (c.635-687). Bishop of Lindisfarne and one of the most popular saints in England in the Middle Ages. He was born about 635, probably of Northumbrian parents. In 651, moved by a vision of angels carrying to heaven the soul of St. Aidan, he entered the monastery of Melrose. Ten years later he was

put at the head of this monastery and did noble missionary work in the surrounding country. He left it in 676 for an austere hermit life, from which he was withdrawn in 684 to accept the Bishopric of Hexham, which he exchanged for that of Lindisfarne, holding the latter only two years and returning (687) to his solitary hut on Farne Island. Here he died, March 20, 687.

The influence of St. Cuthbert upon his contemporaries was great, but his fame became even greater after his death. His body remained at Lindisfarne till 875, when the monks, bearing it on their shoulders, fled from the fury of the Danes. After many wanderings through the south of Scotland and the north of England, they found a resting place at Chester-le-Street in 883. In 995 the remains were transferred to Ripon, and then to Durham, where, inclosed in a costly shrine and believed to work frequent miracles, they remained until the Reformation, when the shrine was defaced and the body buried under the pavement of the cathedral. The tomb was opened May 17, 1826, when a coffin ascertained to have been made in 1541 was found to inclose two others. The innermost case contained a skeleton, still entire, wrapped in five robes of embroidered silk, and also the head of King Oswald, killed in battle (642), which it was known had originally been buried with the saint. His life was twice written by the Venerable Bede and still earlier by a monk of Lindisfarne. Besides these lives, all of which have been printed more than once, and what is told of him in Bede's *Historia Ecclesiastica Gentis Anglorum*, are modern lives: Raine (Durham, 1828), Eyre (London, 1849; 3d ed., 1887), and Fryer (London, 1880).

CUTHBERT OF CANTERBURY (?-758). An English prelate. He was born in the Kingdom of Mercia, became Bishop of Hereford in 736, and Archbishop of Canterbury in 740. He died on Oct. 26, 758. An instructive letter was addressed to him by St. Boniface, in reply to one from him relating the doings of a council which determined upon closer relations between the English church and that of Rome. This letter has been printed more than once and will be found in the appendix to Hussey's edition of Bede, *Historia Ecclesiastica* (Oxford, 1846).

CUTHBERT'S BEADS, SAINT. See BEADS, SAINT CUTHBERT'S.

CUTICLE. See SKIN.

CUTICLE (Lat. *cuticula*, dim. of *cutis*, skin). In plants, a hyaline film covering the surface of plants, and derived from the outer walls of the epidermal cells. The film consists of "cutin," which is a transparent, elastic substance, only slightly permeable to water. The process of formation of the cuticle is called "cutinization," or "cuticularization." The term "cuticle" is sometimes loosely used instead of "epidermis," and is not to be confused with the same term as used by zoologists. See MORPHOLOGY IN PLANTS.

CUTIN (in plants). See CUTICLE.

CUTINIZATION (in plants). See CUTICLE.

CUTLASS (Fr. *couteau*, from OF. *coute*, *cultel*, Fr. *couteau*, knife, from Lat. *cultellus*, dim. of *cultus*, knife). A short curved sword formerly used in men-of-war as a side arm for the men. The blade was usually about 27 inches long, an inch wide, and had a bowl-shaped guard on the hilt. See SWORD.

CUTLASS FISH. A remarkable fish (*Trichurus lepturus*), alone representing in this coun-

try a family (Trichiuridae, the hairtails) of pelagic fishes allied to the sailfishes and better known elsewhere. Its body is long, bandlike, tapering into a hairlike tail, scaleless, and covered with a glistening white skin, so that its resemblance to a sword or to a silver scabbard justifies the European "scabbard fish," or the names "swordfish," prevalent along the Gulf coast, and "silverfish," heard in Florida. Its length may reach 2 or 3 feet, and it swims mostly at the surface, often leaping above it (whence another local name, "skipjack") in pursuit of its prey; and it is sought by anglers both for sport and food. In Jamaica, indeed, it



CUTLASS FISH MOUTH OPEN AND SHUT.

forms the object of a commercial fishery, and another species is the highly esteemed frostfish (q.v.) of New Zealand.

CUTLER, ELBRIDGE JEFFERSON (1831-70). An American scholar and poet, born at Holliston, Mass. He was professor of modern languages at Harvard from 1865 until his death. His works include *War Poems* (1867) and *Stella* (1868). In addition to his creative work, he wrote much criticism.

CUTLER, MANASSEH (1742-1823). An American clergyman and botanist. He was born in Killingly, Conn., graduated at Yale in 1765, and in 1767 was admitted to the bar. He then studied theology, was licensed to preach in 1770, and from 1771 until his death was pastor of Hamlet Parish, Ipswich, now the town of Hamilton, Mass. During the latter part of the Revolutionary War he served as chaplain of a Massachusetts regiment. He subsequently studied medicine and botany and was the first to make a systematic study of the plants of New England, 350 species of which he classified in accordance with the Linnæan system. As the representative of a number of old Revolutionary soldiers, he contracted with Congress for 1,500,000 acres of the public lands northwest of the Ohio, and in 1788 materially assisted the party of Connecticut farmers who, under the lead of Rufus Putnam (q.v.), founded Marietta, Ohio (q.v.). He is generally credited, moreover, with having made the first draft of the famous Ordinance of 1787. He himself went to Marietta in 1788, but soon returned to Massachusetts, and from 1801 to 1805 was a member of Congress. He was a frequent contributor on scientific subjects to the *Proceedings of the American Academy*, and wrote the chapter on trees and plants in Belknap's *History of New Hampshire*. Consult William P. and Julia P. Cutler, *The Life, Journals, and Correspondence of Manasseh Cutler* (Cincinnati, 1888).

CUTLER, TIMOTHY (1683-1765). An American clergyman. He was born at Charlestown, Mass., graduated at Harvard in 1701, became president of Yale College in 1719, but was forced to resign (1722) on account of his prelatinal tendencies. He went to England and was ordained a minister of the Church of England by the Bishop of Norwich (1723) and received the degree of D.D. from both Oxford and Cambridge; he returned to Boston, became rector of

Christ Church (1723), and died there, August, 1765. Some of his letters appear in Nichols, *Illustrations of the Literary History of the Eighteenth Century* (London, 1817-58).

CUTLERY (from *cutler*, AF. *cotelier*, OF. *cotelier*, Fr. *coutelet*, from ML. *cutellarius*, knife maker, from Lat. *cutellus*, little knife). A term broadly applied to cutting instruments in general, but, as more commonly employed, its use is limited to such cutting utensils as pocket, pen, and table knives, razors, shears, and scissors. Shells and sharp-edged stones formed the rudest and most ancient cutting instruments. These were followed by bronze weapons and instruments which were used by the Romans as late as the beginning of the Christian era. In the remains of Pompeii, however, knives, shears, and lancets were found made of iron or steel as well as bronze. During the Middle Ages, when the chivalry of the period sought the best equipment, certain cities of Spain and Italy acquired a high reputation for the manufacture of cutting instruments, especially of swords. The knives used by the Anglo-Saxons resembled in appearance the modern razor blade. Forks were used only for serving, as the custom of eating with forks, which was introduced from Italy, was not known in England until the time of James I. Knives were not placed on the table until about the close of the fifteenth century, and each person carried a knife with him for use whenever the exigencies of dining required other instruments than his fingers. As early as the reign of Richard I Sheffield had gained a reputation for the excellence of its *whittles*, Chaucer referring to a Sheffield "thwytel," or whittle. In 1415 the cutlers of London obtained a charter from Henry V. In the seventeenth century, when England had acquired a reputation throughout Europe for the quality of its cutlery, Birmingham was regarded as the centre of the industry; but during the nineteenth century Sheffield regained its old preeminence.

In America, although some tools were manufactured in Pennsylvania as early as 1810, the first cutlery factory was at Worcester, Mass., and dates from 1829, when a pen and pocket knife factory was established there.

The manufacture of table cutlery in the United States began in 1832, when a factory was built at Saccarappa, Me. With the improvement of the quality and lowering of the price of American steel, the industry steadily developed. The annual product in 1909 of cutlery and edge tools, which includes also shears, axes, swords, joiner's tools other than saws, as reported by the Thirtieth United States Census of 1913, amounted in value to \$22,884,914, produced by 281 establishments, with a maximum number of wage earners of 16,997, showing an increase in value from 1850, when the product was but \$3,813,000 and the number of workers 4275, though there were 401 establishments. In 1913 the United States imported cutlery valued at \$2,026,564 and distributed as follows: pen or pocket knives, \$752,705; razors, and parts of, \$391,303; scissors and shears, \$604,029; all other cutlery, \$278,527. America has excelled in the production of "medium" goods—i.e., goods of tasteful design and good quality at a moderate price, and has developed such specialties as the safety razor; but in the manufacture of other branches of cutlery it has not been so successful. Although it is claimed that an equally good quality is produced at home, still the United States

imports from England large quantities of the finest grades, especially pocket knives. In the very cheap grades, such as vegetable and other kitchen knives which retail in the United States for a few cents apiece, America cannot compete with Germany. Many English workmen, attracted by high prices and steady employment, came over from Sheffield to work in the Connecticut shops. As the industry early became established in that State, some of these afterward migrated to Walden, N. Y., where they built a cooperative factory, and since that time over 50 factories, many of them cooperative, have been established, a number of which have failed, while others have sold out, or have been reorganized as corporations. The piece system of paying the operative still prevails to a large extent in cutlery shops, though the work is done for the most part in large factories. All the early cutlery was hand-forged, and this practice is still general in England and in the United States for the manufacture of some of the best pocket and pen knives. In the latter country to-day, however, large quantities of pocket and pen knives and apparently all table knives and most carving and butcher knives are machine-forged. Machinery is used for driving the various grinding stones, emery and buffing wheels for finishing blades and handles. In some instances, also, the blades are placed in holders and manipulated by automatic machinery for the rough grinding. The evil effects from the grinding dust are now obviated, as far as possible, by wet grinding and by exhaust fans and ducts for removing the dust. The hand and machine processes for making different kinds and grades of cutlery vary greatly in detail. But a fair general idea of the industry may be gained by first describing the actual operations of an American pocket and pen knife factory where hand-forged goods are made, and then indicating in a more general way some points of difference in the manufacture of other kinds of cutlery.

Pocket and Pen Knives. Each knife, rough-speaking, consists of two parts, the blade and the handle, but each of these, from the manufacturer's standpoint, is composed of a number of parts. The blade consists of the blade proper, or cutting edge, and its supporting back, and of the tang, or the portion which joins the blade to the handle. The handle, in turn, includes (1) the horn, ivory, or other material which is grasped by the hand, and which portion alone is technically called the handle; (2) the scale, which is the brass or iron lining of the handle, and (3) the spring, which, besides its primary purpose of controlling the blade in opening and shutting, also closes the back of the lining.

The edge-tool steel from which pocket and pen knife blades are made is called "rod steel", it is flat, of proper widths for the different sizes of blades, and of thickness one gauge greater than the finished blade. In the best goods the blades are forged and shaped by hand. In the case of cheap knives the blades are pressed into rough shape by machines, then further shaped or forged by trip hammers in much the same manner as that explained below in describing table knives. Comparatively little machinery is used on the blades in either case, except that the grindstones and finishing wheels are driven by mechanical power. The processes here described relate to high-grade goods.

Moolding is the name given to the rough shaping of the blade at the first heat, and the forma-

tion of the tang is called *tangging*. After these two processes are completed the metal is heated for the third time, the blade again worked by hammer, and the nail mark cut, which finishes the third or *smithing* process. All the forging is done by means of special hammers on special anvils. *Chocking* is filing the little nick just between the cutting edge and the tang. This removes a weak spot in the metal and serves as a guide in filing the blade flatwise. The blade is now shaped in the rough, but before it leaves the forge it must be hardened and tempered. *Hardening* is effected by bringing it to a red heat and dipping it in water up to the choil. The tang is left soft, so it may be readily filed, drilled, stamped with maker's name, and fitted in the handle. *Tempering* (q.v.) is often accomplished by bringing the blades to a purple heat on a thin copper plate, resting on the fire of the forge. The blades are set on their backs, thus keeping their edges furthest from the heat. The final work of the forger or smith is to straighten crooked blades, if any, by means of light hammer blows on the concave side of the blade.

Grinding is next in order. The grinder places the tang in a holder, which he grasps with one hand, while with the other hand, protected by a leather patch, he presses the blade against the rapidly revolving power-driven stone. *Racing irons*, consisting of small rods of Norway iron, are occasionally held against the face of the stone to restore the rough surface and preserve its cylindrical shape. *Material* is the name given to all the separate parts except the blade. The *material maker* presses out, or cuts out with dies, the steel springs and the brass or iron linings, and fastens the tips or bolsters to the outside of the lining, in case the material forming the handle proper does not cover the tip ends of the lining. *Cutler's work*, curiously enough, includes assembling, or putting together, the various parts of the knife, including drilling, filing, fitting, polishing, and buffing the handles. The material for handles embraces ivory, pearl, silver and gold, tortoise shell, buffalo and stag horn, celluloid, rubber, California redwood, cocoa wood, and ebony. *Polishing* the handles is accomplished by power-driven built-up wood wheels, covered first with leather, then with a mixture of glue and emery. *Buffing* is effected on wheels in which the leather, emery, and glue give place to cotton cloth, fastened on edge around a wheel or spindle. *Blade finishing* is done on emery wheels, much like the polishing wheels already described, except that the glue and emery are placed on very hard leather instead of on wood. *Glazing*, on these wheels, removes the dirt and gives a glazed finish. *Crocus finish* is a superior glaze, or polish, requiring special wheels.

Sharpening is done by hand, on flat stones. The edges of the blades are held at an angle of 45° with the stone, a point that might well be borne in mind by all who attempt to sharpen old knives. The common practice of holding the knives flat on the stone gives a thin, easily broken edge. Finally, the handles are again buffed and the whole knife wiped, packed, and boxed. The ordinary knife of fair quality has now gone through about 100 operations, while the finest goods receive 200 to 300. It may be added that the processes involved in machine-forged pocket and pen knives resemble those described for table knives in the next paragraph.

Table Cutlery, including ordinary and carv-

ing knives, and also forks, is an industry which by the use of machinery and factory organization and method has been brought to a high state of efficiency in America. The product was early standardized and adapted for large scale production as contrasted with England, where for many years manufacture was largely or wholly by hand. Knife blades and tangs are roughly shaped by rolling or by trip or drop hammers—an American innovation which, with its application to striking up the bolster or shoulder, increased the output of two men twentyfold—and are brought to a uniform shape and size by means of dies. The blades are hardened in oil, which is sometimes burned or blazed off. They are sometimes heated in a sand bath to secure the desired color and temper. The holes in the tang are punched and the blades are ground on large power-driven stones, 5 to 7 feet in diameter. Where machinery is used at every possible point, the blades are rough-ground by placing six or more in a brass frame, which is so manipulated as to give them both a side to side and vertical motion on the stone. The finish, however, is done by hand, on wheels similar in general character to those explained in describing pocket knives. The highest grades of steel table knives receive more hand work, but the cheaper ones have even less, and the handle, and in some cases the whole knife, is cast instead of wrought. The same is likewise true of forks, though steel forks, except for carving sets, are gradually decreasing in use with the cheapening and more general availability of plated ware. Wooden handles are generally in two pieces, united to the tang, but ivory, bone, horn, and various other materials are in one piece, with the tang inserted. The curved tines of forks are shaped by means of presses, or dies, and the tines are rough-cut in the same general manner. In some instances more or less forging, either by hand or machine, is employed. Silver-plated (see ELECTROPLATING) table knives and forks are plated on steel or on some softer malleable metal.

Scissors and Shears differ principally as to length, the dividing line in the trade being 6 inches, and the shorter instruments being classed as scissors. Some of the cheapest scissors are cast, but the best ones are hand-forged, though die forging with a heavy press is very much used, and a fly press is used to shear off the rim of superfluous metal so that the portion of the scissors is turned out ready for the grinder. English shears are of steel, but some of the best American shears, which are now largely exported, have their inner sides only of steel, "laid on" to shear blades of malleable iron, often cast in outside foundries.

Razors, at least those of good quality, are practically all hand-forged from razor steel, in much the same general way as pocketknives, but with greater care. There has been a recent tendency towards molding large quantities of razor blanks in a die or under a heavy stamp or hydraulic press. While this process presents difficulties, it was believed that eventually it would supplant the hand-made article. *Safety razors* of various types are provided with guards designed to make cutting the flesh impossible. The earliest safety razor is said to have been made by Michael Hunter, of Sheffield, England, about 1875. It was merely an ordinary razor with a guard. The later safety razors have detachable blades and adjustable guards. The cutting edge

is generally shorter than in the ordinary razor, in some cases not much over an inch in length. The safety razor not only met a world-wide demand, but as hand forging and hand grinding were eliminated it soon became a commercial triumph. Consult: Lloyd, *The Cutlery Trades* (London, 1913), an excellent summary of the industry from its earliest days, giving a comparison of British and other methods; Landrin, *Die Kunst des Messerschmiedes* . . . (Weimar, 1836); Page, *La coutellerie depuis l'origine jusqu'à nos jours* (4 vols., Chatellerault, 1896-98).

CUTLIPS. A curious sucker (*Lagochila lacera*) of the streams of the central Mississippi valley, distinguished at sight by its mouth, where the reduced lower lip is divided into two distinct, elongated lobes; the lower lip, further, is "entirely separated from the upper at the angles by a deep fissure," cloaked by the skin of the cheek. It is olive or brown above, silvery on the sides and belly, and the lower fins are faintly orange. Many names have been given this singular fish, such as harehp, or splitmouth, or rabbitmouth, sucker, and May sucker. See Plate of SUCKERS.

CUTPURSE, MOLL. The sobriquet of Mary Frith, a notorious character, born in London about 1584, a thief and prostitute and famous in almost every form of crime. She dressed in male attire and is said to furnish the first recorded instance of the use of tobacco by a woman.

CUTTACK, küt-täk', or KATAK (Skt. *Kaṭaka*). The capital of the district of the same name in Bengal, British India, situated on the south bank of the Mahanadi, at its junction with the Katpuri, 220 miles southwest of Calcutta (Map: India, E 4). It contains the ruins of an old fort and many educational institutions, including Ravenshaw College. It is famous for its fine filigree work in gold and silver. Other products are oil, fibre, carpets, and cotton goods, made largely by convict labor. Pop., 1891, 47,186; 1901, 51,364; 1911, 52,528, largely Hindus.

CUTTER. The name given to a portion of the equipment of boats on board of a man-of-war. They are double-banked and are fitted either for rowing or sailing. In sailing ships a nest of cutters of varying sizes used to be stowed amidships, one within the other, the launch being the bottom boat of all. At present the boats are either swung at the davits or in cradles resting on frames amidships, clear of the blast of the guns. Modern battleships carry very few cutters on account of lack of room. Instead they have steam launches, sailing launches, and motor launches, mostly of large capacity. (See BOAT.) The name "cutter" is also applied to a small vessel with a single mast, a mainsail, a forestaysail, and a jib set to the bowsprit end. Cutter yachts are sloop-rigged vessels, and the name is now generally applied to sloops of considerable draft and comparatively small beam.

A *revenue cutter* is a light, armed government vessel, commissioned for the prevention of smuggling and the enforcement of the customs regulations. (See REVENUE CUTTER SERVICE, UNITED STATES.) A small, light sleigh with a single seat for one or two persons, usually drawn by one horse, is also called a cutter.

CUTTER, GEORGE WASHINGTON (1801-65). An American poet. He was born in Massachusetts and, after studying law, settled in Kentucky. He fought in the Mexican War and later

entered the political field, where he soon became known as a brilliant public speaker. His most celebrated poems are "The Song of Steam," "The Song of the Lightning," and "E Pluribus Unum." His works were published under the respective titles: *Buena Vista and Other Poems* (1848); *Song of Steam and Other Poems* (1857); *Poems, National and Patriotic* (1857).

CUTTHROAT TROUT. The Rocky Mountain, or black-spotted, trout (*Salmo clarkii*, or *mykiss*). See **TROUT**.

CUTTING. A detached portion of a plant inserted in soil, water, or other media for the purpose of propagation. This process is one of the oldest and most important forms of artificial reproduction. Plants in general lend themselves readily to the process, thus enabling the propagator to secure hundreds of offspring from a single individual. Cuttings are superior to seeds, because, with the exception of bud variations, plants so propagated come true to kind, i.e., varieties of cultivated plants which do not come true to sort by seeds can be perpetuated by cuttings. In the arts of budding and grafting the bud or scion is in reality a cutting inserted in another plant with which it unites and thereby develops much faster than on its own roots. Cuttings are made from such a variety of parts of plants—sometimes even from root, stem, and leaf of the same plant—that a corresponding number of styles of cuttings have been developed. They may be classified, according to the maturity of the part used, as:

Hard-wood cuttings	(1) Simple stem,
	(2) Single eye,
	(3) Heel,
	(4) Mallet, etc.
Soft-wood (herbaceous) cuttings	(1) Stem cuttings—slips,
	(2) Leaf cuttings,
	(3) Root, rootstalk, or rhizome,
	(4) Tubers, etc.

Some conception of the importance of this means of increasing plants can be gathered from the fact that, except for the production of new varieties, all commercial varieties of grapes, currants, and gooseberries are increased in this way, while among flowering and ornamental bedding plants millions are annually produced by one or another of these methods in the United States alone. Sugar cane, pineapples, and potatoes are extensively propagated by this process.

The parts used in making cuttings are numerous, but the methods resorted to are as varied as interesting. Some plants root readily from cuttings placed in the open ground, others require special treatment before they will "strike" root, while still others require most careful nursing in the greenhouse and even under a bell jar to induce them to take root. Special devices, carrying a variety of soils and capable of maintaining a given degree of heat and moisture, have been constructed in order to facilitate the work of propagating plants by this means. Consult Bailey, *The Nursery Book*, and article on "Cuttings," in *Cyclopedia of American Horticulture*.

CUTTING, MARY STEWART (DOUBLEDAY) (1851-). An American writer of stories, born in New York City. In 1875 she was married to Charles Weed Cutting. While still a girl, her verses were published in *Lippincott's*, and after 1894 she was busied continuously in literary work, especially as a writer of short stories and serials. Her publications include: *Little Stories of Married Life* (1902; 2d ed., 1909); *Heart of Lynn* (1904); *Little Stories of*

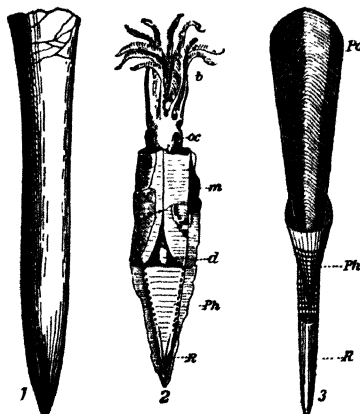
Courtship (1905); *More Stories of Married Life* (1906); *The Suburban Whirl* (1907); *The Wayfarers* (1908); *Just for Two* (1909); *The Unforeseen* (1910); *The Lovers of Sanna* (1912); *Refractory Husbands* (1913).

CUTTING R(ICHARD) FULTON (1852-). An American financier and philanthropist, born in New York City. He graduated at Columbia in 1871 and was prominent in many municipal reforms, becoming president of the Association for Improving the Condition of the Poor in 1892 and president of the New York Trade School Association in 1899. Of his influence and wealth he contributed largely to political reform in New York City, especially to the Citizens' Union (founded in 1897) and the Bureau of Municipal Research. He published *The Church and Society* (1912), Kennedy lectures in the New York School of Philanthropy.

CUTTING, STARR WILLARD (1858-). An American educator and Germanic scholar, born in West Brattleboro, Vt. He graduated at Williams College in 1881, was principal of Deerfield Academy, Deerfield, Mass., for five years, studied at Leipzig, Geneva, and Johns Hopkins (Ph.D., 1892), and then taught in Chicago University, becoming head of the department of Germanic languages and literatures in 1906. Besides editions of school texts, he published *Der Konjunktiv bei Hartmann von Aue* (1894), *The Modern German Relatives "Das" and "Was"* (1904); *Robert Wesselhoef, Jena Burschenschaftler, German Revolutionary, and American Citizen* (1911).

CUTTLE, CAPTAIN. A rough-looking, good-hearted, retired merchant captain in Dickens's novel *Dombey and Son*. His favorite expression, "When found, make a note of," was adopted as the motto of *Notes and Queries*.

CUTTLEFISH (cuttle, *AS. eudle*; connected by popular etymology with *cuttle*, knife, on ac-



FOSSIL CUTTLEFISH (BELEMNITES).

1. A belemnite (*Pachyteuthis acutus*) from the Lower Liass, England. 2. A belemnite (*Belemniteuthis antiqua*) from the Oxford Clay, England, partly restored b, arms; oc, eyes, m, mouth, d, ink bag; Ph, phragmocone, R, guard. 3. Restoration of a belemnite's shell Ph, phragmocone; R, guard. See BELEMNITE.

count of the knifelike cuttle bone, + fish). A popular name of certain cephalopods, originally applied to a calamary (*Sepia officinalis*), but

now generally restricted, in the United States at least, to octopoda. (See OCTOPODA.) The European cuttlefish (*Sepia*) furnishes cuttlefish bone and sepia, which are of commercial importance. The former is the calcareous "pen," or brace, which lies along the "back" of the creature beneath the skin; and the sepia is the substance in its "ink bag," by throwing out which it beclouds the water and eludes pursuit.

Fossil cuttlefish bones of *Sepia*, scarcely different from the modern species, are found in various Tertiary deposits. In the Triassic, Jurassic, and Cretaceous rocks are other forms of sepoid shells that are not calcified, but are thin, elongated, and horny, often containing fossilized ink bags and hardened ink, which may still be prepared and used for drawing. *Sepia* and its allies are supposed to have evolved from Belemnite-like forms through such intermediate stages as the genus *Belosepia* of the Tertiary. See CEPHALOPODA; SQUID; and Colored Plate of OCTOPODS AND DECAPODS in article DECAPODA.

CUTTS, EDWARD LEWES (1824-1901). An English clergyman. He graduated at Queens' College, Cambridge, and was ordained in 1848. He was curate successively of Ide Hill (Kent), Coggeshall (Essex), Kelvedon (Essex), and in 1859-65 of Billericay (Essex), and after 1871 was vicar of the church of the Holy Trinity, Haverstock Hill, London, N. W. He wrote on English archaeology, especially ecclesiastical, and published a *Dictionary of the Church of England* (1887).

CUTTYHUNK. The most southerly island in Buzzard's Bay, Mass., on which the first settlement of white men in any part of New England was made (Map Massachusetts, F 5). Sailing from Falmouth, England, March 25, 1602, Bartholomew Gosnold, in the ship *Concord*, with "32 persons, whereof 8 were mariners and sailors, 12 proposing upon the discovery to return with the ship for England, the rest to remain there for population," made land off the coast of Maine on May 14. Coasting southwesterly, he discovered and named Cape Cod, and, coming "amongst many fair islands, all lying within a league or two, one of another, and the outermost not above 5 or 7 leagues from the main," landed on Cuttyhunk on the 25th of May. This they called Elizabeth's Isle, after the Queen, and here they built a fort. On account of disagreements the settlement was abandoned on June 18, and the colonists returned to England. Cuttyhunk later became the home of many pilots, when New Bedford had 400 whaling ships. The winter population is 50, and in summer, in the clubhouses and hotels, several hundred. The United States Life-Saving Station was established in 1889, and the house of the Massachusetts Humane Society in 1847. Consult *New England Magazine* (Boston, 1897).

CUTTY STOOL (Scot. *cuttie*, short, dim. of *cut* + *stool*). A seat once used in the Scottish church for the exposure of offenders against chastity. The sinner was required to sit on the stool before the whole congregation during the entire service and, at its close, to stand up while severely reprimanded by the minister.

CUT WORM. The terrestrial caterpillar of certain noctuid moths, mainly of the genus *Agrotis*, which winter and pupate in the ground and are ready to attack early vegetation. Cutworms are night feeders and cut the plants off at the level of the ground, destroying far more than they can eat. They attack wheat, Indian

corn, oats, and all the cereals, as well as garden vegetables. By day they hide under the surface of the soil, where each patch of withering vegetation marks their hiding places. In vegetable beds these spots should be dug over and the up-turned worms killed; holes made with a hoe or rake handle furnish favorite hiding places by day and thus serve as traps to catch many a worm. Some kinds of cutworms ascend trees by night and cut off tender leaves and buds, descending and hiding in the early morning. A widely distributed example is *Agrotis saucia*, a pest of orchards in both Europe and America.

CUVIER, ku'vyá', FRÉDÉRIC (1773-1838). A French naturalist, born at Montbéliard. He was professor of zoology in the Jardin des Plantes, Paris, and keeper of the collection in comparative anatomy at that institution. His published works include *Sur les dents des mammifères comme caractères zoologiques* (1825) and *Histoire naturelle des mammifères* (jointly with Geoffroy de Saint-Hilaire, 1819-29). He was a brother of Baron Georges Léopold de Cuvier.

CUVIER, GEORGES LÉOPOLD CHRÉTIEN FRÉDÉRIC DAGOBERT, BARON DE (1769-1832). A French naturalist, founder of the science of comparative anatomy, born at Montbéliard, then in the Duchy of Wurtemberg, to which place his father, formerly an officer in a Swiss mercenary regiment, had retired on a pension. He was educated at home in the strictest tenets of the French Protestant or Calvinistic faith, and at the age of 14 entered the Academy at Stuttgart, where he remained four years. His father intended him for the ministry, but he showed such a love for natural history that he was allowed to spend his time in pursuing such studies in that branch of science as the academy afforded, and supplemented them with reading almost every scientific book in the library. In 1788 he became tutor in the family of the Comte d'Héricy, a Protestant nobleman living near Caen, on the coast of Normandy. Here, during the stormy years of the Reign of Terror, he remained, quietly utilizing the rather unusual facilities the neighborhood offered for the study of marine animal life and fossil remains, thus laying the foundations of his future eminence. A chance acquaintance with the Abbé Tessier, a writer on agricultural subjects, who was struck with young Cuvier's remarkable knowledge of zoology, secured for him an introduction to Geoffroy Saint-Hilaire, who at once recognized in Cuvier a man of genius and urged him to move to Paris. Here, in 1795, he became, through the influence of Lacépède, Lamarck, and others, assistant to Mertrud, the professor of comparative anatomy at the Jardin des Plantes. He immediately took a high position among the scientists in Paris and was chosen one of the original members of the Institute upon its organization in 1795. In 1796 he was chosen professor of natural history at the central school of the Panthéon, and in 1800 he succeeded Daubenton in a similar position at the Collège de France. In 1802 he succeeded Mertrud at the Jardin des Plantes. In 1798 appeared his first separate work, *Tableau élémentaire de l'histoire naturelle des animaux*, in which he introduced tentatively his classification of animals upon which so much of his fame rests. Between 1800 and 1805 were published the five volumes of his *Leçons d'anatomie*, which brought together the hitherto disconnected knowledge of comparative anatomy and gave him the right to be con-

sidered the founder of that branch of science. In 1800 he published his first work on paleontology, *Mémoires sur les espèces d'éléphants vivants et fossiles*. At the opening of the nineteenth century, therefore, Cuvier may be said to have already attracted the attention of the scientific world to the three branches with which his name will always be connected.

Cuvier began his career as an administrator in 1802, when he was appointed an inspector of education under the Consulate and helped establish *lycées* at Marseilles, Bordeaux, and Nice. From 1808 to 1813, as a member of the council of the Imperial University under Napoleon, he spent considerable time in Italy, Holland, and Germany, organizing the academies in the districts recently annexed to the Empire. In 1814 Napoleon made him a Councillor of State, a position which he continued to hold under Louis XVIII. In 1819 he became president of the Committee of the Interior, and chancellor of the University of Paris. He was made a member of the Academy in 1818 and a grand officer of the Legion of Honor in 1826. In 1822 he was appointed grand master of the faculties of Protestant theology, in which position he had supervision of all the civil, political, and religious affairs of Protestant institutions and organizations. In 1831 Louis Philippe made him a peer of France, and in 1832, shortly before his death, was considering him for the office of Minister of the Interior.

With all his administrative duties, Cuvier still found time and opportunity to pursue his scientific investigations. His life work falls naturally into three divisions—paleontology, systematic zoology, and comparative anatomy. In each of these departments he achieved remarkable success and left a lasting impression, in spite of mistakes due largely to personal peculiarities derived from his Calvinistic training, such as his refusal to accept the theory of descent. By means of his knowledge of comparative anatomy, and his theory of the correlation of growth, Cuvier "reconstructed" a large number of extinct animals, proving that every geological epoch is represented by distinct animal forms, having a similarity well defined to animals in preceding or succeeding epochs. Nevertheless, he held to the Linnæan doctrine of the constancy of species, and looked upon the similarity of animal forms in successive epochs as a recurrence of types rather than a steady development of the same type. In comparative anatomy his work in special fields was as remarkable as it was valuable. His investigations of the comparative anatomy of fishes and of the osteology of mammals may be mentioned as two of his most valuable contributions to zoology. In systematic zoology his work was of great originality and importance, for to him is due the reclassification of the animal kingdom on a natural basis, in place of the artificial and arbitrary classification of Linnæus. Cuvier's system was based on the constancy and morphological resemblance of types rather than on outward similarities of structure. It remained the standard arrangement of animals until set aside by modern investigators. Cuvier's great work, *Le règne animal* (1816), became at once the standard reference book in natural history.

Among his works not noted above are: *Les reptiles douteux* (1807); *Recherches sur les ossements fossiles des quadrupèdes* (1812); *Mémoire pour servir à l'histoire et à l'anatomie des mol-*

lusques (1816); *Description géologique des environs de Paris* (1822); *Histoire naturelle des poissons* (1828); *Discours sur les révolutions de la surface du globe et sur les changements qu'elles ont produits dans le règne animal* (1851). (Consult: Lee, *Memoirs of Baron Cuvier* (New York, 1883; Fr. trans., Paris, 1833); Flourens, *Histoire des travaux de Georges Cuvier* (Paris, 1845); Ducrotay de Blainville, *Cuvier et Geoffroy Saint-Hilaire* (ib., 1890).)

CUVILLIER-FLEURY, ku've'yá-flé're', ALFRED ARGUSTE (1802-87). A French author, born in Paris. His love of letters brought him to the attention of the Duc d'Orléans, who made him tutor to his son, the Duc d'Aumale (1827). These duties ended, he became a political writer on the *Journal des Débats*. In 1806 he was made a member of the Academy. Among his works are: *Voyages et voyageurs* (1837-54); *Études historiques et littéraires* (1854); *Nouvelles études historiques et littéraires* (1855); *Dernières études historiques et littéraires* (1859); *Historiens, poètes et romanciers* (1863); *Études et portraits* (1863-68); *Posthumes et vivants* (1878). Consult the biography by the Duc d'Aumale, in *Le livre du centenaire des débats*, and Bertin's edition (1900) of his *Journal intime*.

CUXHA'VEN, Ger. pron. kyks-há'f'en. A German seaport and watering place on the North Sea, at the mouth of the Elbe, about 57 miles northwest of Hamburg (q.v.), to which it belongs (Map: Germany, C 2). It has a fine harbor, which has been much improved in recent years, and which is now the station of the Hamburg pilots. It is a free port, being outside the Zollverein, and the Hamburg-American Steamship Company have made it the point of arrival and departure of their mail service. It is fortified and has a handsome old castle of the fourteenth century. Pop., 1900, 6906; 1905, 11,145; 1910, 14,888. See HAMBURG.

CUYABÁ, kú'yá-bá'. An episcopal city of Brazil, the capital of the State of Mato Grosso, situated on the Cuyabá River (Map: Brazil, F 7). It has broad, well-paved streets and contains barracks, an arsenal, and a military hospital. The town was formerly famous for gold and diamond mines and is now an important commercial centre. It has a steamship service to Montevideo, a trip of over 2500 miles. Pop., 1890, for the city, 14,507; for the municipality, 1912 (est.), 20,000.

CUYAHOGA (kí'a-hó'gá) FALLS. A village in Summit Co., Ohio, 33 miles south by east of Cleveland, on the Baltimore and Ohio, and the Cleveland, Akron, and Columbus railroads, and on the Cuyahoga River (Map: Ohio, G 3). It contains a public library and has manufactures of paper bags, wire nails, sewer pipe, machine-shop products, rubber goods, and flour. The water works and electric-light plant are owned by the village. Pop., 1910, 4020.

CUYLER, kí'lér, THEODORE LEDYARD (1822-1909). An American Presbyterian clergyman. He was born at Aurora, N. Y., Jan. 10, 1822; graduated at Princeton in 1841 and at Princeton Theological Seminary in 1846. After holding charges in New Jersey, he became pastor of the Market Street Reformed Dutch Church, New York, in 1853, and was pastor of the Lafayette Avenue Presbyterian Church, Brooklyn, from 1860 to 1890. His eightieth birthday was publicly celebrated in Brooklyn. He was prominent in temperance work. He was an influential

preacher and a prolific writer of books and articles. In 1902 he published his *Recollections of a Long Life*.

CUYO (kōō'yō) **ISLANDS**. A group of the Philippine Islands, Province of Paragua, in the northern waters of the Sulu, or Mindoro Sea (Map: Philippine Islands, C 5). The larger islands are volcanic, and the smaller are low-lying sandy tracts on a coral foundation. On a bay on the southwest shore of Grand Cuyo, the largest of the group, is the town of Cuyo, the capital. Its chief support is fishing and its population mostly women. It has defensive works and a thriving trade. Total number of islands in the group, 49; total area, 47 square miles; pop., 1903, 10,982.

CUYP, koip, **ALBERT** (1620-91). A Dutch landscape and animal painter. He was born at Dort, in October, 1620, and studied with his father, Jakob Gerrits Cuyp, a portrait and animal painter of mediocre ability. The son painted animals, still life, and even portraits, but in landscape he was one of the greatest and most original of his day. He was influenced by Jan van Goyen, but soon developed the fresh daring color and glowing atmospheric effects which constitute the peculiar beauty of his work. He was a close student of nature, though at times overhasty in execution. His landscapes found most appreciation in England, where most of them are still preserved, and he undoubtedly influenced such great English painters as Wilson and Turner. He is best represented in London—the National Gallery, Buckingham Palace, Bridge-water House, Wallace collection, Dulwich College, etc. Good examples of his work are also in the museums of St. Petersburg, Berlin, Paris, and Rotterdam, and a fine cattle piece in the Metropolitan Museum, New York. Consult Witzbach, *Niederländisches Künstler-Lexikon* (Leipzig, 1906), and De Groot, *Beschreibung und Verzeichniss der Werke holländischer Maler* (ib., 1908).

CUYPERS, koip'pērs, **PETER** (1827-). A Dutch architect, born at Roermond. He studied at the Academy of Antwerp. The Royal Museum at Amsterdam is by him. He restored the Mainz Cathedral and built a number of important church edifices, including those of St. Jacob at The Hague, St. Barbara at Breda, St. Catharine at Eindhoven, the Sacred Heart at Amsterdam, and St. Boniface at Leeuwarden. He wrote *Der Dam zu Mainz*, *Baugeschichtliche Skizze* (1878) and *Le Château de Haar à Haarszuydens* (1910).

CUZA, kōō'zā. See **ALEXANDER JOHN I.**

CUZCO, kōō's'kō, *Castilian Sp. pron.* kōōth'kō (Quechua, navel, as being the centre of the ancient Inca Empire). An episcopal city, the capital of the department of the same name, Peru, situated on the eastern end of that section of the Andes known as the Knot of Cuzco, more than 11,000 feet above sea level, and 360 miles east-southeast of Lima (Map: Peru, C 6). It is regularly built in part and contains several handsome buildings, prominent among which are the cathedral, in the Corinthian style, and the convent of Santo Domingo, built in part on the site of the great Inca Temple of the Sun. There are also hospitals, a university founded in 1692, a national college, and a museum. The city is the centre of a fertile agricultural district and has considerable trade and manufactures of cotton and woolen goods, refined sugar, leather, and embroidery. Pop. (est.), 20,000. Cuzco, the

capital of the Incas, is said to have been founded in the eleventh century. It retains evidences of its former splendor, although the ancient city was destroyed by Pizarro in 1535. These remains include the palace of the Incas, a fortress built of massive and irregular stone blocks, the temple of the Sun, and the temple of the virgins of the Sun.

CUZCO. The second largest department of Peru, bounded by Loreto on the north, Bolivia on the east, Puno and Arequipa on the south, and Apurimac, Ayacucho, and Junín on the west (Map: Peru, C 6). Area, 156,317 square miles. The southern and western parts are mountainous, and the eastern and northern are low and covered with thick forests. The department is to a large extent unexplored, and only a small portion in the south is inhabited. It is watered by the Urabamba and the head streams of many tributaries of the Amazon. The population is chiefly engaged in agriculture and cattle raising. Pop., officially estimated in 1906 at 328,980. Capital, Cuzco (q.v.).

CUZZONI, kōō-dzō'nē, **FRANCESCA** (1700-70). An Italian dramatic contralto, born at Parma. After studying under Lenzi she achieved her first great success at Venice in 1719, and later (1722-26) she added to her fame by singing in London in the operas of Handel, during the composer's own venture as an impresario. (See **HANDEL**.) In 1727 she was engaged in a bitter rivalry with Faustina Bordoni, who had supplanted her in Handel's company. She was married to Sandoni, the pianist and composer, and thereafter sang in Vienna, in Italy, and in Holland, where she was imprisoned for debt. It is asserted that in her old age she earned a living by covering silk buttons and that she finally died in miserable poverty.

CYAN'ELIDE. See **CYANIC ACID**.

CYAN'AMID. A trade name for an artificial fertilizer containing about 45 per cent of calcium cyanamide and 27 per cent of calcium hydroxide. Calcium cyanamide is the name given by chemists and scientific agriculturists to the commercial cyanamid, though strictly it should apply only to the chemical compound designated by the formula $CN_2.NCa$, containing about 20 per cent of nitrogen. Free cyanamide, or acid cyanamide, designated by the formula $CN.NH_2$, was first obtained by Bineau in 1838, but was not isolated until 1851, when Cloez and Cannizzaro first described it. This work, however, was long before the commercial manufacture of calcium cyanamide, which is now made in the electric furnace. The calcium carbide, produced in the electric furnace, is removed, cooled, and crushed, and then packed into nitrifying ovens, which are cylindrical, perforated steel cans set in heat-insulated brick ovens. The carbide is heated to a temperature where it will combine with the nitrogen by means of a carbon rod in the centre of the can, through which the electric current passes, and nitrogen, which is obtained either from liquid air or more usually by the copper-oxide process, is admitted. The chemical reaction resulting in calcium cyanamide is as follows: $CaC_2 + N_2 = CaCN_2 + C$.

The material, both powdered and granulated, is sold to manufacturers of mixed fertilizers. Its use as a nitrogen fertilizer was proposed in 1901 by A. Frank and H. Freudenthal, while the basic patents for its manufacture were issued to Prof. Adolph Frank and Dr. Nicodem

Caro in 1908. A number of large works in Europe are engaged in the manufacture of the calcium cyanamide under these basic patents, and a large factory at Niagara Falls, Canada, in 1914, had a capacity in excess of 60,000 tons annually.

A number of tests have been made of the commercial cyanamid at various experiment stations in Europe and America, and in Germany it has been used as a weed destroyer in addition to supplying nitrogen to the young plants. It is said to be valuable for inducing a slow, steady growth of plants rather than as a forcing material, and is least efficient when used as a top dressing. It should be well mixed with soil at least a week before the crop is planted, and 250 pounds per acre is said to be the maximum amount that can be economically employed. It is not suited to acid soils, which should be first limed or treated with barnyard manure, as the latter material will supply the bacteria that are deficient in such soils. An even distribution of the material is facilitated by mixing it with two or three times its weight of damp earth. When used mixed with the standard commercial fertilizers, the cyanamid does not require any modification of the usual practice or special instructions. For its chemistry and use, consult: Pranke, *Cyanamid: Its Manufacture, Chemistry, and Use* (Easton, Pa., 1913). Fritsch, "Manufacture of Cyanamide and of Nitrate," in *Manufacture of Chemical Manures* (1911), and special bulletins from the various experiment stations as well as journals dealing with chemical technology. See also MANURES AND MANURING; NITROGEN, FIXATION OF.

CYANE, sí'a-nē (Lat., from Gk. *Κυανή*, *Ky-anē*). In Greek legend, the wife of Æolus, the god of the winds. Also a nymph, playmate of Persephone. She was transformed into the spring Cyane near Syracuse because of her grief when Hades carried off Persephone from this neighborhood. See CERES.

CYANIC ACID (from Gk. *κύανος*, *kyanos*, dark blue), HCNO . An unstable compound of carbon, hydrogen, oxygen, and nitrogen, obtained by heating cyanuric acid (qv.) in a current of carbon dioxide. Under ordinary conditions it is a volatile liquid having a strong pungent odor, but is transformed with explosive rapidity into a white, porcelain-like mass of the same percentage composition as cyanic acid. This polymeric modification of cyanic acid is known as *cyamelide*. (See WOHLER.) After a long series of unsuccessful attempts, Van't Hoff succeeded in showing that three molecules of cyanic acid come together in the formation of cyamelide; which does not prove, however, that the resulting cyamelide molecule is $(\text{HCNO})_3$, and the probability is that the molecule of cyamelide is much more complex. Among the salts of cyanic acid may be mentioned the cyanate of potassium and the cyanate of ammonium. Potassium cyanate may be readily obtained by cautiously heating a mixture of potassium ferrocyanide and potassium bichromate; when pure, it forms a white crystalline powder readily soluble in water, in which, however, it gradually undergoes decomposition. Ammonium cyanate may be obtained from the cyanate of potassium by double decomposition. The transformation of ammonium cyanate into urea, observed by Wöhler in 1828, constituted the first synthesis of an organic compound and formed an event of the

greatest importance in the history of chemistry. See CHEMISTRY.

The careful study to which many derivatives of cyanic acid have been subjected has led to the view that cyanic acid may possess two different constitutional formulas, viz., $\text{N} \equiv \text{C} - \text{O} - \text{H}$ and $\text{O} = \text{C} := \text{N} - \text{H}$. All efforts to produce two different compounds corresponding to those formulas having failed, chemists have proposed to explain this comparatively rare phenomenon on the following hypotheses: 1. Cyanic acid, like most other organic compounds, has a definite structure—say, $\text{N} \equiv \text{C} - \text{O} - \text{H}$; but while during some of its transformations that structure remains unaltered, other transformations involve an intramolecular change resulting in the formation of derivatives of the compound $\text{O} = \text{C} = \text{N} - \text{H}$ ("isocyanic acid"), which is, for some unknown reason, less stable than the compound $\text{N} \equiv \text{C} - \text{O} - \text{H}$ and incapable of existing in the free state. 2. According to another hypothesis, every single molecule of the acid is constantly changing its structure, its hydrogen atom rapidly oscillating between the nitrogen and the oxygen; so that while at a given instant the structure of the molecule might be represented by the formula $\text{N} \equiv \text{C} - \text{O} - \text{H}$, we should find its structure to be $\text{O} = \text{C} = \text{N} - \text{H}$ if we could stop the motion of the hydrogen atom at the very next instant. The substance is thus imagined to be composed, at any instant, of two different kinds of molecules, and as under certain conditions each kind may be capable of transformations which the other kind could not undergo, two series of derivatives should be expected, according to the nature of the transformations necessary to produce those derivatives and to the conditions under which the transformations take place. See also FULMINIC ACID.

CYANIDE PROCESS. See GOLD, Metallurgy. **CYANIDES.** See HYDROCYANIC ACID.

CYANITE (from Gk. *κύανος*, *kyanos*, dark blue), KYANITE, DISTHENE, or SAPPAHE. An aluminum silicate that crystallizes in the triclinic system. Although sometimes gray or green, it usually has a blue color and a vitreous to pearly lustre. The handsomest specimens are found in the St. Gotthard region in Switzerland, in the United States, Chesterfield, Mass., and Bakersfield, N. C., are well-known localities. Fine specimens have been cut as gems, but, as a rule, the material is too soft for wear.

CYANOGEN (Gk. *κύανος*, *kyanos*, dark blue + *γενής*, *genēs*, producing, from *γενεσθαι*, *gignesthai*, Lat. *gignere*, Skt. *jan*, to be born). An important compound of carbon and nitrogen obtained by heating dry cyanide of mercury in hard glass tubes. It is a poisonous gas, having a peculiar odor and dissolving quite readily in water and in alcohol. If ignited in air, it burns with a purple flame, its carbon combining with the oxygen of the air to form carbon dioxide, while its nitrogen is set free. When dry, cyanogen is an exceedingly stable substance and may be heated as high as 800° C. without being decomposed; in aqueous solution, however, it gradually undergoes a series of chemical changes resulting in the formation of ammonia, hydrocyanic acid, urea, oxalic acid, and other compounds. The molecular formula of cyanogen is C_2N_2 , its molecule being composed of two "cyanogen groups" (CN , or, as it is still sometimes written, Cy), which enter into the composition of a large number of other substances known. Some of these interesting substances having a

blue color, the name "cyanogen" has been applied to the gas from which they are derived; but the gas itself is perfectly colorless. During the preparation of cyanogen from the cyanide of mercury an amorphous brown substance forms, which has the same percentage composition as cyanogen, but probably a much higher molecular weight; this compound is called *paracyanogen* and is denoted by the symbol (CN)_x. Paracyanogen may be readily transformed into cyanogen gas by heating.

The derivatives of cyanogen form a large group of compounds, including hydrocyanic acid and its salts, the ferrocyanides and ferricyanides, cyanic and cyanuric acids and their derivatives, etc. The most important of these compounds are described in special articles.

CYANOIDEA (Neo-Lat. nom. pl. from Gk. *κύανος*, *kyanos*, dark blue + *εἶδος*, *eidos*, form). A suborder of the Carnivora (q.v.), composed of the family Canidae (dogs, wolves, jackals, etc.), regarded as forming the most central group of the Carnivora, from which the bears, weasels, and raccoons (Arctoidea) depart on the one hand, and the cats, civets, and hyenas (Ailuroidea) depart on the other. Consult Huxley, *Anatomy of Vertebrate Animals* (New York, 1878), and the books mentioned under MAMMALIA; Dog; Fox; ETC

CYANOMETER (Gk. *κύανος*, *kyanos*, dark blue + *μέτρον*, *metron*, measure). An instrument for determining the color of the sky, invented by Saussure—a disk divided into sections, the several sections being tinted and gradually increasing in intensity from white to deep blue. When used to compare with the color of the sky, some of its sections will appear deeper and some lighter in tint. The section where there is no perceptible difference gives the measure or degree of the blueness of the sky.

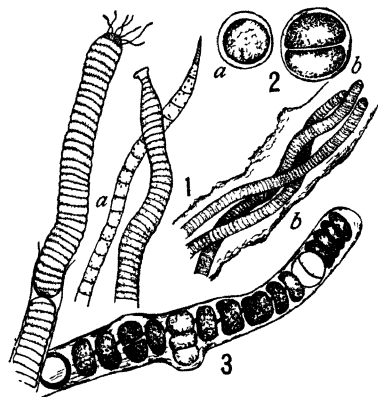
CYANOPHYCEÆ (Neo-Lat. nom. pl. from Gk. *κύανος*, *kyanos*, dark blue + *φυκος*, *phykos*, seaweed). The lowest of the four great groups of algae. They are called blue-green algae from the prevailing color of the cell contents, which are tinted by a diffused blue pigment named "phycocyan." The cell structure is very simple, agreeing in this respect with the Bacteria (q.v.), with which they are usually associated in a group "Schizophytes," distinct from the true algae. For details of cell structure and classification, see ALGÆ.

Many of the Cyanophyceæ are one-celled, or consist of indefinite aggregations of cells situated in a common gelatinous matrix. Other forms are filamentous, and some are elaborately branched. A well-known unbranched form is *Oscillatoria*, interesting because of the movements of the tip of the filament, which swings in a complex curve. *Nostoc* forms large gelatinous balls filled with convoluted chains of cells. Certain cells in some filamentous forms lose their protoplasmic contents, becoming the so-called heterocysts, whose functions are but partly understood: they are responsible in many cases for the branching of the filaments, because the heterocysts become firmly fastened to the sheaths that inclose the vegetative cells. The growth of the latter causes such pressure between the fixed points, determined by the heterocysts, that the sheath is ruptured and the filament grows out at one side. Such branching is termed "false branching." Branches or portions of filaments that break off and start new plants are called "hormogonia."

The Cyanophyceæ are especially fond of warm shallow water, although many grow in damp situations on land, such as spray-wet rocks, damp timber, and earth. They live among the reeking vegetation of salt marshes and flourish in open sewers and drains. The fouling of shallow reservoirs in warm weather, when they give off the well-known "pigpen odor," is due to growth of Cyanophyceæ. The remedy is to deepen the water or apply copper sulphate. See ALGÆ.

One of the most remarkable displays of Cyanophyceæ is in warm springs, well illustrated in Yellowstone National Park, where the growths are brilliantly colored. Here certain species grow luxuriantly in water at a temperature of 75° C. and above, conditions which no other forms of algae can endure.

Another conspicuous display of blue-green algae is the water bloom or scum that frequently covers the surface of ponds and small lakes.



CYANOPHYCEÆ.

1, a and b, *Oscillatoria*, 2, *Chroococcus* (a), and its division (b), 3, *Stigonema*, showing false branching and heterocysts.

Most of the water blooms are due to Cyanophyceæ, and the largest of all has given name to the Red Sea, whose tint is due to the presence of a flocculent sediment made up of bundles of short filaments of *Trichodesmium*. This peculiar condition of the ocean is not confined to the Red Sea, but has been reported off the coast of Brazil and South Carolina and in the Indian and Pacific oceans.

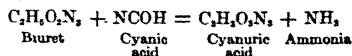
Consult Wolle, *Fresh-Water Algae of the United States* (Bethlehem, Pa., 1887).

CYANOPHYLL (Gk. *κύανος*, *kyanos*, dark blue + *φύλλον*, *phyllon*, leaf). A collective name for the blue coloring substance of leaves and flowers. See COLOR.

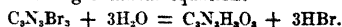
CYANO'SIS (from Gk. *κύανος*, *kyanos*, dark blue). Lividity of the skin, caused by interruption of the circulation or of the respiration caused by nonoxidation of the blood. It may be temporary, as in a convulsion, when the face or lips are blue, or in crop (q.v.), where the face is bluish during an attack. It may be permanent, as in a "blue baby," or child born with obstructed pulmonary circulation, or with a defect in the heart (patent foramen ovale), by reason of which the arterial and the venous

blood are constantly mixed. These children rarely live long.

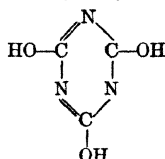
CYANURIC ACID (from *cyanogen* + *uric*, from Gk. *κύβηρ*, *ouron*, urine), $C_3H_3O_3N_3$. An organic chemical compound produced by heating urea. The latter is probably first transformed into biuret and cyanic acid, which then combine to form cyanuric acid, according to the following equation:



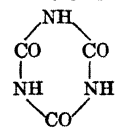
The most convenient method of preparing cyanuric acid is by heating the compound of cyanogen and bromine represented by the formula $C_3N_3Br_3$ with water at about $125^\circ C$, the formation of the acid taking place according to the following chemical equation:



Cyanuric acid is a colorless crystalline substance sparingly soluble in water and yielding, when heated, ordinary cyanic acid. Like cyanic acid (q.v.), it is capable of yielding two series of derivatives, the study of which has led to assigning to it two "desmotropic" formulas, corresponding to the two different ways in which the acid may behave chemically, according to the transformations to which it may be subjected and the conditions under which those transformations may take place. These formulas represent the structures of two different cyanuric acids, though only one can be actually prepared:



Normal cyanuric acid



Isocyanuric acid

CYATHASPIS (Neo-Lat., from Gk. *κύθος*, *kyathos*, cup + *ἀσπίς*, *aspis*, shield). The name of a genus of Paleozoic fishlike forms, specimens of which are found in the Upper Silurian and Old Red Sandstone of Great Britain and strata of corresponding age in New Brunswick. It has been commonly regarded as an early ancestor of the fishes, but more recent study of the fossils which include only the dorsal and ventral shields has tended to show that the genus belongs to a class by itself, lying between the arthropods and the vertebrates. No evidences of vertebrae or notochord have been found, nor are the jaws of vertebrate type, consisting of a mere opening between the anterior margins of the shields.

CYATHOPHYLLUM (Neo-Lat., from Gk. *κύθος*, *kyathos*, cup + *φύλλον*, *phyllon*, leaf). A genus of fossil stony corals common in rocks of Middle Paleozoic age. The characters that distinguish this from other genera are of very obscure nature. The species, of which there are about 100 in number, ranging through Ordovician to Carboniferous rocks, vary greatly in form from small solitary individuals to large masses of closely compacted zooids, and their generic affinity can be determined only by study of thin sections under the microscope. The family of which *Cyathophyllum* is the type is a large one and includes many genera, of which the most important, *Heliophyllum*, *Eridophyllum*, *Lithostro-*

tion, *Omphyma*, and *Columnaria*, occur abundantly in the fossil coral reefs of the Silurian, Lower and Middle Devonian and the Carboniferous. A recent reef-building coral, *Moseleya*, from Torres Straits, shows affinities with the ancient *Cyathophylloidea* and serves to link this family with the modern *Astræidae*. See *CORAL*; *CORAL ISLAND*.

CYAXARES I (Gk. *Κυαξάρης*, *Kyaxarēs*, OPers. *Uxarsatara*, having good growth or prosperity, Neo-Elam. *Vakūtara*, Babylon. *Uvakūstar*). King of the Medes from 625 to 585, or 584 B.C., or, according to other authorities, from 634 to 594 B.C. Herodotus (i, 101-103) says he was the son of Phraortes, and grandson of Deioces, who was the founder of the Median Empire. He describes the pioneer work which Cyaxares did in organizing a powerful and well-trained army, and alludes to an eclipse which took place about 585 B.C., when this monarch was at war with Alyattes, King of Lydia. A large part of Asia was brought under Cyaxares' sway, and he was successfully invading Assyria and besieging Nineveh when his own kingdom of Media was invaded by the Scythians. In the combat which ensued the Scythians gained the day and held dominion over the Medes some 28 years. Media at last threw off the Scythian yoke, and Cyaxares once more successfully engaged the Assyrians and conquered Nineveh and the surrounding provinces with the exception of Babylon. The reign of Cyaxares lasted 40 years, including the Scythian domination, and his name is often mentioned in the Old Persian inscriptions as the one to whom the rebel princes of Media, who revolted against Darius, traced back their lineage in claiming the throne. Consult Messerschmidt, *Die Inschrift der Stiele Nabonids in Mittheilungen der Vorderasiatischen Gesellschaft*, vol. i (1896). See *Media*.

CYAXARES II. According to Xenophon (*Cyrop.* i, 5, 2), a grandson of Cyaxares I (q.v.) and son of Astyages, and maternal uncle of Cyrus the Great. On the authority of Herodotus, however, it is generally believed that Astyages had no son, and it has been suggested that Cyaxares II may have been the brother of Astyages and son of Cyaxares I. His identity with Ahasuerus of the Bible has likewise, but with uncertainty, been suggested. In this way it has been thought that Cyaxares II may perhaps be the same as Darius the Mede in the Book of Daniel or even be identical with Gobryas. But the whole matter is complicated and uncertain. See *DARIUS THE MEDE*.

CYBELE, κύβη-λή (Gk. *Κυβέλη*, *Kybelē*, 'Pia, *Rhea*'), or *RHEA* *CYBELE*, or the *GREAT MOTHER OF THE GODS*. A divinity whose worship spread far and wide through the ancient world, though its early seats seem to have been Crete and Asia Minor. According to the myth which belonged to the worship of Zeus on Mount Ida, in Crete, Rhea was the wife of Cronus and mother of Zeus, Poseidon, and Hades, i.e., of the ruling race of gods. (See *JUPITER*; *SATURN*.) In Asia Minor we find widespread worship of a nature goddess, regarded as the mother and source of all life, and honored with orgiastic rites upon the mountains and among the wild woods and caves. The wild beasts attended upon her, especially the lion, by whom her throne was watched and her car drawn. Her priests were called *Corybantes* (q.v.). The Asiatic worship of Cybele had its chief centre at Pessinus in Phrygia, whence it passed into Lydia. United

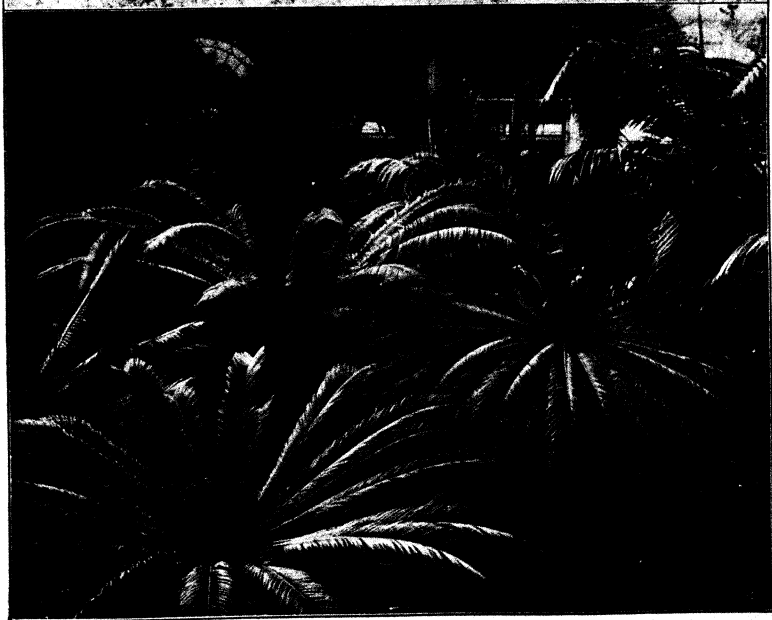
CYCADS AND CYPRESS



1. CYPRESS TREE near Monterey, Cal.

2. *CYCAS REVOLUTA*, in New York Botanical Garden.

CYCADS AND CYPRESS



1. CYPRESS TREE near Monterey, Cal.

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dance wherever favorable Mesozoic deposits occur, ranging through North America, Europe, Asia, and extending into the Arctic regions, so that Bennettitales were evidently a world-wide type of great prominence. The evidence is clear that the group is directly connected with the extinct Paleozoic group of gymnosperms called Cycadofilicales. It is altogether probable that this Paleozoic group gave rise to a Mesozoic branch, which differentiated into Bennettitales on the one hand, and into Cycadales on the other—the former group dominating during the Mesozoic, and the latter continuing to the present day. In general habit the Bennettitales resemble the Cycads so closely that they were naturally mistaken for them until their internal structure, and especially that of their cones, was understood. Consult: Coulter and Chamberlain, *Morphology of Gymnosperms* (Chicago, 1910); Scott, *Studies in Fossil Botany* (London, 1909); Wieland, *American Fossil Cycads* (Washington, 1906).

CYCLADES, sik'la-dēz (Lat., from Gk. *Kyklādes*, *Kyklades*, from *κύκλος*, *kyklos*, circle). A portion of the archipelago lying southeast of Greece, in the Ægean Sea, comprising, in ancient times, the islands of Ceos (Zea, Kea), Cythnus (Thermia), Seriphus (Serpho), Siphnus (Siphanto), Gyarus, Syros (Syra), Paros, Antiparos, Andros, Tenos, Myconus, Delos, Rhenea, Melos, and Naxos (Map Greece, F 4). This group, arranged in three series, was supposed to form a circle with the sacred island of Delos at its centre, and this belief accounts for the name of the group. The modern nomarchy of the Cyclades includes, as well as the above, the islands of Cimolus, Polycandrus, Sicinus, Ios (Nio), Amorgos, Santorini (Thera), Anaphi, and about 200 smaller islands, some of which were formerly grouped with the Sporades (q.v.). The total area is 1041 square miles. The islands are mountainous, having altitudes of over 3000 feet in some instances. Some are of volcanic formation. With the exception of Naxos they are generally scantily watered and sparsely wooded. The formation of the most northern islands is limestone, slate, gneiss, and marble. In the south, eruptive rocks. They produce southern fruits and large quantities of marble, limestone, cement, fuller's earth, emery, manganese, and sulphur. Wine, brandy, hides, and tobacco are exported. Pop. (province), 1896, 137,747; 1907, 130,378. The chief town and capital is Hermopolis (q.v.), on Syra.

CYCLAMEN, sik'la-mēn (Neo-Lat., from Gk. *κυκλάμιος*, *kyklaminos*, from *κύκλος*, *kyklos*, circle, referring to its corolla). A genus of plants of the family Primulaceae, having a wheel-shaped corolla with a long reflexed limb, and flower stalks twisted spirally downward after flowering. The species are herbaceous perennials, about 15 in number, and chiefly alpine in the south of Europe. They have turnip-like, partly subterranean stems, which are very acrid, but nevertheless are greedily eaten by swine, and the plants are accordingly often designated "sow bread." They are drastic and emmenagogic. Several of the species are frequent in our flower gardens, on account of the beauty and fragrance of their flowers. The most common species are *Cyclamen europæum* and *Cyclamen latifolium*, the latter being the source from which are obtained many of the forms cultivated as Persian cyclamens. The corolla of *Cyclamen latifolium* is strongly reflexed, giving the flower a curious

appearance. Consult: Candolle, *Sur une monstrosité du Cyclamen neapolitanum* (Geneva, 1887); Wooster, *Alpine Plants* (London, 1885), with color illustrations; Bennett, *Flora of the Alps* (ib., 1897). For illustration, see Plate of GREENHOUSE PLANTS.

CYCLE (Lat. *cyclus*, from Gk. *κύκλος*, *kyklos*, circle; connected with Skt. *cakra*, AS. *hucāl*, Eng. *wheel*). A term used in chronology to denote an interval of time in which certain phenomena always recur in the same order. Cycles have chiefly arisen from the incommensurability of the periods of revolution of the earth and other celestial bodies. Our unit of time is the day of 24 hours, being the period of revolution of the earth round its axis. But neither the year—the period of the earth round the sun—nor the month—the period of the moon round the earth—can be measured by days, or even by hours, so as not to leave fractions. Cycles have been invented in such a way that after a certain number of revolutions of the body whose period is to be compared with that of the earth on her axis, the body shall at last occupy the same place in the heavens and calendar as it did when the cycle commenced. Of the numerous cycles or periods of this kind that have been invented, the more important are noticed under their specific names. See GOLDEN NUMBER; INDUCTION; METONIC CYCLE; PERIOD; ETC.

CYCLE CAR. A name given to a development of the motor cycle which has four wheels (or three) instead of two and is provided with a body within which the passenger and the driver sit. The capacity is usually two persons, and these may sit side by side, or the one in front of the other as in a tandem motor cycle. The driver usually is placed in front of the passenger. When the tandem arrangement is used, the gauge or centre distance between wheels on the same axle is 36 inches, or one meter in metric countries. The wheels are of small diameter (28 or 30 inches) and the construction light in weight (from 350 to 650 pounds), so that two persons can lift and carry the car. With side-by-side passenger seating, the gauge will be greater than 36 inches and the wheel base longitudinally between $7\frac{1}{2}$ and $8\frac{1}{2}$ feet. The motor will usually be two-cylindere, arranged either in V-form or parallel side by side, and with the shaft parallel to the axles, moving the latter by two chains at the sides of the body. Friction gearing has been popular as a means to secure the variable speeds and reversal between motor shaft and the driving wheels, and when belts are used from a jackshaft to the driving wheels, no compensating gear seems required to operate on curves. The air cooling of the motor cylinders is popular for the smaller sizes.

The line of separation between the small motor car and the cycle car is not very clearly defined, except so far as the gauge of wheel track and the volume of the motor cylinders determines one. The motor vehicle has a gauge of 56 inches, the same as that of the standard wagon, and will "track" with the latter in road ruts.

At a meeting of the Fédération Internationale des Clubs Motor Cyclistes, on Dec. 14, 1912, it was formally decided that there should be an international classification of cycle cars, this classification to hold good in England, Canada, United States, France, Holland, Belgium, Italy, Austria, and Germany. It was also decided to divide

the classification into two classes, large and small cycle cars, as follows.

LARGE CLASS

Maximum weight	784 pounds
Maximum piston displacement	1100 cubic centimeters (67.1 cubic inches)
Minimum tire size	60 millimeters (2½ inches approx.)

SMALL CLASS

Minimum weight	330 pounds
Maximum weight	660 pounds
Maximum piston displacement	750 cubic centimeters (45.75 cubic inches)
Minimum tire size	55 millimeters (2¼ inches)

The smallest class of standard motor has a cylinder volume of 160 cubic inches.

The cycle car has been developed to meet the demand for a low-priced, mechanically propelled vehicle, light in weight, using little fuel and small tires, cheap in first cost, in operation, upkeep, and stabling, carrying two persons, and safer against upset on poor roads or trails than the motor cycle. Its small wheels prevent its entering into the class of high-speed vehicles, and it is not so well adapted for long tours with luggage.

CYCLICAL FORMS (from *cyclic*, Lat. *cyclicus*, Gk. *κύκλικος*, *kyklikos*, circular, from *κύκλος*, *kyklos*, circle). In music, forms that consist of a cycle or series of movements, such as the suite, concerto, sonata, or symphony. The origin of cyclical forms is to be found in the form of the old overture, which consisted of three parts—the first and third being slow, while the middle part was lively. Gradually these three parts were extended and detached. In the older compositions the movements were alternately slow and fast. But soon it became customary to begin and end with a fast movement. In the modern symphony the customary arrangement is: (1) fast, (2) slow; (3) fast, (4) fast. But Beethoven's "Sonata," opus 109, and Tschaiikowsky's "Symphonie Pathétique," are two famous examples of cyclical compositions closing with a slow movement. Originally all the movements of a cyclical composition were written in the same key. The development of the sonata (q.v.) wrought a change in this direction, so that different keys (though always related to the fundamental) were assigned to the different movements. The first and last movements, however, are always in the same key, which is considered the fundamental key of the whole work. If the first movement is in minor, the last is generally in the parallel major.

CYCLIC ANAPÆST. See VERSIFICATION.

CYCLIC CHORUS (Gk. *κύκλικός χορός*, *kyklikos choros*). The chorus of 50 men or boys which danced in a circle around the altar of Dionysus during the dithyramb. See CHORUS.

CYCLIC DACTYL. See VERSIFICATION.

CYCLIC POETS (Gk. *κύκλικοί ποιηταί*, *kykli-koí poietai*). The name was given by the Greek grammarians of Christian times to a class of minor epic poets, who wrote on subjects dealing with events preceding, as well as during and following, the Trojan War; their works taken together formed a complete cycle of the events covered by the Trojan story. There was also a Theban cycle. The following titles are known to us: *Theogony*, *Titanomachy*, *Cypræ*, *Little Iliad*, *Destruction of Troy*, *The Return*,

Telegony, *Edipodea*, *Thebais*, *Epigoni*, and *Ethiopsis*. Our knowledge of the Epic Cycle is due largely to Photius and to Proclus. The scanty fragments with testimonia are best published by Kinkel, *Epicorum Græcorum Fragmenta* (Leipzig, 1877); also as an appendix to Welcker's *Der epische Cyclus* (Bonn, 1835-49). Consult the Appendix to Monro's edition of *Odyssey*, xiii-xxiv (Oxford, 1901), and Allen, "The Epic Cycle," in *The Classical Quarterly*, ii (1908). See ÆTHIOPIS; AGIAS; CYPRIÆ; LÆSCHES; PHOTIUS; PROCLUS; STASINUS; TABULA ILIACA, TELEGONUS; THEBAIS; THEBAN CYCLE.

CYCLING (from *cycle*). The use or act of riding the cycle, either bicycle or tricycle. Although now a common utility of everyday business life, as well as a means of recreation, it had its origin at the beginning of the latter half of the nineteenth century in what was then an improved velocipede and was used only for sport or recreation. (See BICYCLE.) The progress of cycling as a means of recreation was very rapid, its greatest general popularity occurring between 1890 and 1900. Thereafter for several years it steadily lost ground as a sport, partly if not largely as a result of objectionable features of professionalism which appeared in many race meets. However, apart from the many physical advantages derived from the practice of cycling as an exercise, it has been of inestimable benefit to the community at large, in that it has given to all a capacity of locomotion which formerly none but those of ample means and leisure could enjoy, and, as a natural consequence, has developed a general interest in the many "good roads" movements through the United States and England. Many long-distance tours have been accomplished by its means, notably that of Thomas Stevens, who, between April, 1884, and December, 1886, rode round the world, and Lenz, who (1892-94) rode a wheel carrying all his necessities, as well as a camera, across America, Samoa, Japan, through China, Burma, India, Baluchistan, Persia, and Armenia. *Road racing* has always been a popular sport, and in the early nineties had attained such proportions that nearly every city and town throughout England and America had its annual road-racing fixtures.

Track racing is entirely artificial, and confined usually to professional riders racing under unnatural conditions. Long-distance and relay races, such as have been held at Tattersall's, Chicago, and Madison Square Garden, New York, while financially profitable to their projectors, have been very severely condemned as of no real value to the sport and frequently injurious to the riders themselves. The League of American Wheelmen, which was formed while cycling was at its height, was an excellent institution and did much to improve the roads, but with the decline of the sport the League declined to a shadow. Similar advantages are obtained for tourists in Europe by the Cyclists' Touring Club of England, founded in 1873 with headquarters in London, S. W. With this latter organization is allied the Touring Club of France and the Deutsches Radfahrerbund. The military organizations of all the European countries include corps of specially equipped and drilled cyclists, whose principal duties are the transmission of orders and the securing of information, for which purposes their speed, their noiselessness, and the comparatively good roads

which prevail have made them conspicuously useful. See ARMY ORGANIZATION: TACTICS, MILITARY.

CYCLOID (Gk. κύκλῳιδης, *kykloeidēs*, circle-like, from κύκλος, *kyklos*, circle + εἶδος, *eîdos*, form). A plane curve, the locus of a point on the circumference of a circle which rolls along a straight line. If, in Fig. 1, circle *O* rolls on

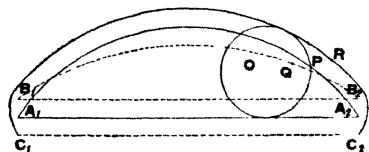


FIG. 1.

the line A_1A_2 , the point *P* traces the arc of the cycloid $A_1P_1A_2$. If the generating point is taken at *Q*, within the circle, the resulting curve is B_1QB_2 , called a "prolate cycloid." If the generating point is taken at *R*, in the plane of the circle, the resulting curve is C_1RC_2 , a "curtate cycloid" or trochoid. If the generating circle roll on a fixed circle, instead of a straight line, curves like those in Fig. 2 are produced. (See

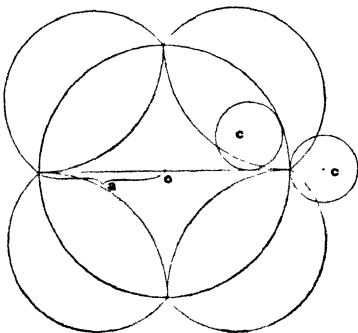


FIG. 2

CARDIOID) The curve formed by rolling the generating circle around the outside of the fixed circumference is called an "epicycloid." On the other hand, that produced by rolling the generating circle on the inside of the fixed circle is called a "hypocycloid." These curves belong to a general class called "rouleTTes," of which the cycloid is the simplest member. The construction for the cycloid was known to Bouvelles (1503), but its name is due to Galileo (q.v.), who in a letter to Torricelli (1639) recommends it for bridge arches. The term "trochoid" is due to Roberval (q.v.), and the term "roulette" (1659) to Pascal (q.v.). Roberval also effected (1634) the quadrature of the cycloid, showing that it equals three times the area of the generating circle, and he determined the volume obtained by revolution about its axis. Descartes constructed its tangents, and Pascal (1658) determined the length of its arc and the centre of gravity of its surface and of the corresponding solid of revolution. The length of one branch of the cycloid is four times the diameter of the generating circle, and its area is three times that of the same circle. If

A, (Fig. 1) is taken as the origin of coördinates, and *a* is the radius of the generating circle, the equation of the cycloid is

$$x = a \text{ vers } y^{-1} \left(\frac{y}{a} \right) - \sqrt{2ay - y^2}.$$

It is simpler, however, to use the expressions for *x* and *y* separately; viz., $x = a(\theta - \sin \theta)$, $y = a(1 - \cos \theta)$. The equations of the hypocycloid are

$$x = (a - b) \cos \theta + b \cos \frac{(a - b)}{b} \theta,$$

$$y = (a - b) \sin \theta - b \sin \frac{(a - b)}{b} \theta,$$

where *a* and *b* are the radii of the fixed and rolling circles. If the radius of the fixed circle is four times that of the rolling circle, the equation of the hypocycloid is $x^2 + y^2 = a^2$, *a* being the radius of the fixed circle, as in Fig. 2. Because of the elegance of its properties and because of its numerous applications in mechanics, the cycloid is the most important of the transcendental curves. One of its most interesting properties is that the time of descent from rest of a particle from any point on its inverted arc to the lowest point is the same; i.e., the cycloid is an isochronous curve. Thus, on an ideally hard and smooth surface whose sections are cycloids, the particle, having reached the lowest point, will through the momentum received in its fall, ascend the opposite branch to a height equal to that through which it fell, losing velocity at the same rate as it acquired it. The cycloid is also the curve of quickest descent; i.e., an object acted upon by the force of gravity, and setting out from any point of the cycloid, will reach any other point of this curve in shorter time than by following any other path. The cycloid is therefore referred to as the *brachistochrone* (Gr. βραχίστονος, *brachistos*, shortest, and χρόνος, *chronos*, time). The problem of finding the brachistochrone was proposed by Jean (Johann) Bernoulli in 1696 and formed the first important step in the calculus of variations. It was solved by Bernoulli himself, by Leibnitz, Newton, L'Hôpital, and Jacques (Jakob) Bernoulli. For the interesting history of the cycloid, consult any of the leading histories of mathematics, and also: Chasles, *Aperçu historique sur l'origine et le développement des méthodes en géométrie* (Paris, 1875); De Groningue, *Histoire de la cycloïde* (Hamburg, 1701); Tannery, "La cycloïde dans l'antiquité," in *Bulletin des sciences mathématiques* (Paris, 1883).

CYCLOID FISHES. One of the four orders of fishes proposed by Agassiz, based on the character of the scales. Cycloid scales have the posterior or free margin smooth and not spinous. Cycloid-like ctenoid (q.v.) scales are not covered with enamel and belong to many of the present as well as many fossil fishes. The chub and its allies are examples.

CYCLOMETER (Gk. κύκλος, *kyklos*, circle + μέτρον, *metron*, measure). An instrument for recording the revolutions of any rotating object, as of a carriage wheel, bicycle wheel, or certain parts of machinery. One of the most common forms consists of a stud projecting from one of the spokes of a wheel and catching a toothed wheel, turning it one notch at each revolution. A similar instrument for measuring distances traversed is an odometer. This instrument, invented by Hudson, is extensively used by surveyors in collecting data for maps.

It is commonly attached to the wheel of a wagon, or to a light vehicle drawn by hand. The term "cyclometry" is often applied to the method of measuring circumferences or areas of circles (q.v.), but more generally it refers to the theory of circular functions. See FUNCTION.

CYCLONE. See STORM.

CYCLOPEDIA. See ENCYCLOPEDIA.

CYCLOPEAN ARCHITECTURE, or MASONRY. The name frequently used for an ancient wall of large, irregular stones, rudely hewn or quite unwrought. The term originated in Greece, where structures of this kind were fabled to have been the work of the Cyclopes. The ancients also attributed them to the Pelasgians (q.v.), whence such walls are sometimes called Pelasgian. The walls of Tiryns (q.v.), near Nauplia, are an example of the ruder style of Cyclopean masonry. They are made of huge stones, from 8 to 10 feet long, from 3 to 4 feet wide, and from 2 to 3 feet deep. The stones are either unwrought or roughly dressed with the hammer; some effort at horizontal joining was made. The interstices are filled up by small stones, and clay mortar was employed to bind them, though it has now been washed away to a great extent. The walls of Mycenæ (q.v.) are in part of the same rude construction as at Tiryns, but near the Lion Gate they are faced with huge rectangular blocks, fitted in rudely horizontal courses, and the same style of masonry (but more carefully executed) is employed in the great beehive tombs. A portion of the wall of Mycenæ—of much later date—is built of polygonal stones, carefully fitted so as to leave no interstices. Walls of the same general character are found in Asia Minor and Italy, where they surround many of the old Etruscan towns, though here the walls are more commonly in the rude ashlar masonry also found at Mycenæ. While in Greece these walls belong for the most part to the Mycenaean period, and are probably to be attributed to the Achaean domination, it is not likely that this style of fortification was peculiar to any one race, as similar masonry has been found in China and also in Peru and on a smaller scale in the British Isles. Polygonal masonry, composed of carefully hewn and fitted blocks, is common in Greek works of later times, and the early walls of Troy, as well as the tombs already mentioned, show that the Mycenaean civilization was capable of building walls of hewn and fitted stones, as good as, or better than, those erected in the classical times. The Cyclopean architecture is discussed in histories of architecture (q.v.), or in works dealing with the Mycenaean age (see ARCHAEOLOGY), or Etruria (q.v.). For a description of the remains of Cyclopean architecture in Greece and Italy, consult: Middleton, *Grecian Remains in Italy* (London, 1812), a rare work; Dodwell, *Views and Descriptions of Cyclopean or Pelasgic Remains in Greece and Italy* (ib., 1834), and, for a more general discussion, Petit-Radel, *Recherches sur les monuments cyclopéens* (Paris, 1841).

CYCLOPES, αἰ-κλό'πεζ (Lat., from Gk. κύκλωες, *kyklōes*, round-eyed, from κύκλος, *kyklos*, circle + ὤψ, *ōps*, eye). In Greek mythology, a race of one-eyed monsters, described as follows: 1. Homeric Cyclopes, a wild, lawless, gigantic race of shepherds, inhabiting an island in the western sea. The most famous is Polyphemus (q.v.). Homer describes him as one-

eyed, and later poets attributed this characteristic to his companions. 2. The Hesiodic Cyclopes, Brontes, Steropes, and Arges (i.e., Thunder, Lightning, and Thunderbolt), each having one eye in the middle of his forehead. They were the sons of Uranus and Gæa. Hurled into Tartarus by their father, but delivered by their mother, they helped Cronus to usurp the government of heaven. Cronus, however, in his turn, threw them back into Tartarus, whence they were again released by Zeus, whose servants they now became. Finally, they were slain by Apollo, because they forged the thunderbolt with which Zeus killed Asclepius. The Alexandrian and the Roman poets represented them as the companions and assistants of Hephestus at his forge, which was situated in a volcano, as at Lipari or Etna. In this capacity they were frequently represented on works of art. 3. The Cyclopes, a people who were said to have come from Thrace or Lycia to Argolis, and to have built the mighty walls of Tiryns, Mycenæ, and Argos for King Proteus. See CYCLOPEAN ARCHITECTURE. Consult Mayer, *Die Giganten und Titanen* (1887).

CYCLOPS. A play by Euripides, following the Homeric account of the adventures of Odysseus with the Cyclopes, and remarkable as the only preserved specimen of a satyric drama. (See *Greek Drama*, under DRAMA.) It has been translated by Shelley, who omitted a few passages.

CYCLOCORAMA (Gk. κύκλος, *kyklos*, circle + δράμα, *horama*, sight). A term applied to a painting placed on the walls of a large cylindrical room representing a landscape, battlefield, or other subject, with true perspective. The spectator stands in the centre, and the effect is extremely realistic, especially in the case of the representation of a battle, the cyclocorama of the battle of Gettysburg being a well-known American example. See PANORAMA.

CYCLOISIS (Neo-Lat., from Gk. κύκλωσις, *kyklōsis*, a surrounding, from κύκλος, *kyklos*, circle). The rotation of the protoplasm within a plant cell. Only the outermost portions remain quiet. The various inclusions of the protoplasm, such as chloroplasts, nucleus, etc., are swept along with it. The mass descends on one side of the cell and ascends on the other. A line of no movement necessarily exists between the portions moving in opposite directions. See PROTOPLASM.

CYCLOSTOMI (Neo-Lat. nom. pl., from Gk. κύκλος, *kyklos*, circle + στόμα, *stoma*, mouth). A class of eel-like marine animals, the lampreys and hags, regarded as the lowest existing vertebrates (excluding Amphioxus). They have eel-like bodies of very primitive construction. "The spinal column is represented merely by a thick, persistent notochord, inclosed in a sheath, with, in the lampreys, small cartilaginous processes representing neural and hæmal arches. The skull is cartilaginous and is peculiarly modified. Behind it in the lamprey is a remarkable basket-like apparatus, composed of cartilaginous processes. This branchial basket, as it is termed, supports the gill sacs. The gill sacs, of which there are either six or seven pairs, are the organs of respiration and represent the gills of the true fishes." They are, however, very differently arranged, opening externally in some forms by several gill slits, and in others by only one, and communicating internally with the pharynx in diverse ways. Other organs do not

differ so widely from those of the true fishes, the most remarkable fact being that there is only one nasal sac and nostril instead of a pair. The round mouth, without jaws, suggests that of leeches. The Cyclostomi, which by some ichthyologists are regarded as an order (Marsipobranchii) of fishes, are bottom-keeping, voracious, slimy creatures, occasionally truly parasitic, and are traceable back to Paleozoic times.

Fossil Forms. Minute teeth (conodonts), found in Paleozoic rocks, have been by some authors considered to be teeth of cyclostomid fishes, but they are more probably the teeth of carnivorous annelids like the modern *Nereida*. In the Caithness flagstones of the Old Red Sandstone of Devonian age, near Thurso, in Scotland, are found numbers of a small, eel-like fossil, which has, with much probability of correctness, been referred to the cyclostomes. These small fossils, known as *Paleospondylus*, vary in length from 1 to 2 inches and consist of an oblong skull, made of bony plates, armed anteriorly with small calcified cirri, and provided posteriorly with two long prolongations that parallel the vertebral column. From between these prolongations projects the long vertebral column, made up of distinct calcified elements, with neural spines in the abdominal region, and both neural and haemal spines in the caudal region. A long, diphycceral tail fin with very slender rays, of which those of the neural series are bifurcated, must have formed a powerful swimming organ for this small fish. This fossil, if it be a true cyclostome, differs from all others of the group in having a calcified skeleton. Consult Calvet, "Diagnoses de quelques espèces nouvelles de Bryozoaires Cyclostomes," in *Institut Océanographique, Bulletin* No. 217 (Monaco, 1911), and Dean, "The Devonian Lamprey, *Paleospondylus gunni*, Traquair, with Notes on the Systematic Arrangement of the Fish-like Vertebrates," *Memoirs of the New York Academy of Sciences*, vol. 11, part 1 (New York, 1899). This work includes a complete bibliography of fossil cyclostomes. See CONODONT; HAGFISH; LAMPREY; and Plate of LAMPREYS AND DOGFISH.

CYCLOSMMETRY. See SYMMETRY.

CYCLUS (Lat., circle). A curious fossil crustacean found in the coal measures of North America and Europe. It is of a circular, convex form, with usually a low median ridge on its dorsum, and its surface is either smooth, radially striated, or nodular. A pair of small sessile compound eyes, like those of the horseshoe crab, have been found near the anterior lateral margin of some American examples. These fossils are perhaps the larval stages of other crustaceans, like *Belinurus*, *Euproops*, *Prestwichia*, of which adult specimens are often found in the same beds with *Cyclus*. Consult Woodward, "On the Genus *Cyclus*," *Geological Magazine*, vol. viii (1870), and 4th series, vol. 1 (London, 1894). See PRESTWICHIA. XIPHOSURA.

CYDIPE (Gk. *Κυδίπη*). See ACONTIUS.

CYDNUS (Lat., from Gk. *Κύδνος*, *Kydnos*). A river of Cilicia, passing the city of Tarsus and emptying into the Mediterranean. It was on this river that Cleopatra made her voyage to meet Antony.

CYDONIA. See QUINCE.

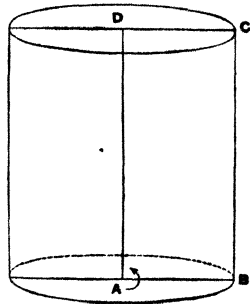
CYGNÆUS, FREDRIK (1807-81). A Finnish poet and literary historian. He was born at Tawastehus and was educated at the University

of Åbo, where he lectured from 1839 to 1843, when he began an extensive tour through Europe. In 1854 he became professor of æsthetics and modern literature at the University of Helsingfors. He bequeathed his fortune and valuable art collection to the state. His poetic works were published by him under the title *Skaldestycken* (6 vols., 1851-70).

CYGNÆUS, UNO (1810-88). A Finnish educator, born at Tawastehus. From 1837 to 1839 he was a pastor and teacher at Wiborg, from 1839 to 1846 spiritual director of the colony at Sitka, Alaska, and in 1861 was appointed chief inspector of the Finnish public-school system, which he thoroughly reorganized. In 1863 he established the first normal school in Finland and became its director. He was the first to make manual work (*sloyd*, *sloyd*) a part of regular public-school instruction. He published *Forslag rörande folkskoleväsendet* (1861).

CYGNUS (Lat., from Gk. *Κύκνος*, *Kyknos*, the swan). A northern constellation situated to the east of Lyra and northwest of Pegasus. Several stars in this constellation have received the particular attention of astronomers. β *Cygni*, first detected as a double star by Bradley, has two beautiful colored components of the third and fifth magnitudes—the former topaz yellow, the latter azure. δ *Cygni*, also a double star, was the first star to have its parallax (q.v.) determined, this was done by Bessel in 1838. The parallax, 0.37 sec., indicates a distance of 9 light years, so that, with the exception of α *Centauri*, δ *Cygni* is our nearest stellar neighbor. *Nova Cygni*, discovered as a star of the third magnitude by Schmidt at Athens in 1876, is now, according to Barnard, of the 15th magnitude.

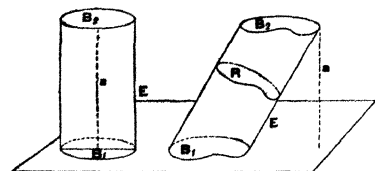
CYLINDER (OF, *cylindre*, Fr *cylindre*, from Lat. *cylindrus*, from Gk. *κύλινδρος*, *kylindros*, roller, from *κυλίνδω*, *kylindō*, *κύλειν*, *kylēin*, to roll). A surface generated by a line (the generatrix) which moves parallel to a fixed line and touches a given curve (the directrix) is called a cylindrical surface. The space enclosed by a cylindrical surface is called a cylindrical space. The portion of a cylindrical space limited by two parallel planes cutting all the elements of the cylindrical surface is called a cylinder. If the directrix is a circle, the cylinder is called a circular cylinder; if the directrix is an ellipse, the cylinder is called an elliptic cylinder, and so on. If the elements (positions of the generatrix) are perpendicular to the plane of the directrix, the cylinder is called a right cylinder; otherwise it is called oblique. If a rectangle is revolved about one of its sides, a cylinder of revolution, or a right circular cylinder, is formed. The plane figures which form



A CYLINDER OF REVOLUTION.

the ends of a cylinder are called its bases, and these are always congruent. The perpendicular distance between the bases is called the altitude.

The lateral area of any cylinder, expressed in surface units, is the product of the number of linear units in the perimeter of a section perpendicular to the elements (right section) and the number of linear units in an element. The number of units of volume of a cylinder is equal to the product of the number of square units of the base and the number of linear units in the altitude of the cylinder.



A RIGHT CIRCULAR CYLINDER. AN OBLIQUE CYLINDER
B₁, B₂, lower and upper bases, E, an element, R, a right section, a, the altitude.

A cylindrical surface may be considered as a conical surface (see CONE) with the vertex at infinity. Hence plane sections of the cylindrical space of a right circular cylinder lead to the so-called conic sections, in particular, to the ellipse. If $V \equiv$ volume, $C \equiv$ curved surface, $B \equiv$ base, $A \equiv$ total area of surfaces, $a \equiv$ altitude, $r \equiv$ radius of the base (or of the inscribed sphere), and $R \equiv$ the radius of the circumscribed sphere of a right circular cylinder, then $V = \pi r^2 a$, $C = 2\pi ra$, $A = 2\pi r^2 + 2\pi ra = 2\pi r(r + a)$, $R = \sqrt{\frac{a^2}{4} + r^2} = \frac{1}{2} \sqrt{a^2 + 4r^2}$. The volume of a sector of a cylinder of arc k° is $\frac{k}{360} \pi r^2 a$; if the arc is given in radian measure, as n radians, the volume is $\frac{1}{2} \pi r^2 a$. If a plane parallel to the axis cuts off a segment, the corresponding arc cut from the base being k° , the volume of the cylindrical segment is $V = \frac{r^2 a}{2} \left(\frac{k}{180} \pi - \sin k^\circ \right)$, or if $k^\circ = n$ radians, $V = \frac{r^2 a}{2} (n - \sin n)$. The mensuration of the cylinder was well known to the Greeks and was studied specially by Archimedes (q.v.). He showed that the volume and surface of a sphere are equal to two-thirds of the volume and surface, respectively, of the circumscribed cylinder. In consequence of this discovery, as Cicero relates, the sphere and cylinder were sculptured on his tomb.

CYLINDER SNAKE. One of a family (Ilysiidae) of small burrowing snakes allied to the Typhlopidae and shield snakes, and retaining vestiges of pelvis and hind limbs, the latter showing in clawlike spurs protruding between the scales on each side of the vent. The form is cylindrical, the scales small, polished, and hardly larger on the belly than elsewhere, and the colors bright. The few species are scattered over the Malay Islands and Indo-China, where the common "red snake" (*Cylindrophis rufus*) reaches a length of 2½ feet, and occur in Ceylon and South America. A beautiful species (*Ilysia scytale*) in tropical South America is one of those called "coral snake," and is coral red with black rings. On account of its beauty, perfectly harmless nature, and "for cooling purposes," this snake is said to be sometimes worn as a necklace by the native women.

CYLIX. See VASE.

CYLLENE, sil-lé'né (Lat., from Gk. Κυλλήνη, *Kyllēnē*). A mountain in northwest Arcadia, the fabled birthplace of Hermes. (See MIZCURY.) Its modern name is Ziria. Height, 7790 feet.

CYLON (c.660-c.610 B.C.). An Athenian noble, son-in-law of Theagenes of Megara, who sought to make himself tyrant of Athens. He was victor at Olympia (640 B.C.). In 612 B.C., with the protection of the Delphic oracle, and with outside help from Megara and the aid of a disaffected party in Athens, he seized the Acropolis of Athens. He was blocked there by Megacles, an Alcmaeonid, archon for the year, and surrendered on being promised his life, but was killed with his followers. The immediate result was war with Megara; the more lasting effect was the bloodguiltiness of the Alcmaeonidae (q.v.), of which their opponents so often took advantage to attack them.

CYMA (Lat. *cyma*, hollow sphere, from Gk. κύμα, *kyma*, swelling, from κύειν, *kuein*, to swell). In architecture, a molding having a profile of double curvature, part convex and part concave, each part usually a quarter round. When the convex part is next the wall or shaft, it is a cyma recta; when it is the outermost part, the molding is a cyma reversa. It corresponds practically to the modern ogee molding. See MOLDING.

CYMATIUM, si-mā'shī-ūm. See CORNICE.

CYMBALS (OF. *cimbale*, Fr. *cymbale*, Lat. *cymbalum*, Gk. κύμβαλον, *kymbalon*, from κύμβος, *kymbos*, cup, Skt. *kumbha*, pot, Ger. *Humppe*, drinking cup). Instruments of percussion in the form of round plates with leather holders. When struck one against the other, they produce a loud, harsh sound of no fixed pitch. The best cymbals are those made in Turkey and China. Attempts to discover and imitate the composition of the metal have all failed. The notes in music for this instrument are written on the same line or space, in rhythmical succession. Although originally military instruments, cymbals are now much used in the orchestra.

CYMBELINE, sim'bē-lin or -lin, or CUNOBELINUS. A king of the Britons, who lived in the earlier part of the first century of our era. His capital was Colchester. In 40 A.D. Cymbeline banished his son Adminius, who made his submission to Caligula. The Emperor considered Britain a part of the Roman Empire, but no attempt was made to subdue the island till after the death of Cymbeline. In 43 Aulus Plautius was sent to Britain by Claudius, but was opposed by Togodumnus and Caratacus, the sons of Cymbeline. We have no other authentic information of Cymbeline except what may be derived from the few coins extant. The story of Cymbeline which Shakespeare used in the drama is found in Holinshed's *Chronicle* and is in large measure mythical. Consult Boswell-Stone, *Shakespeare's Holinshed* (2d ed., London, 1907).

CYME, sīm (Gk. κύμα, *kyma*, swelling). A flat-topped flower cluster in which the pedicels arise at different levels upon an elongated axis and the innermost flowers bloom first. See INFLORESCENCE.

CYMOPHANE. See CHRYSOBERYL.

CYMBRY or **KYMBRY**, kim'ri. See WALES, *History*.

CYNANCHE, si-nā'n'ké (Gk. κυνάχη, *kynal-chē*, dog quinsy, from κύων, *kyōn*, dog + ἄγχειν, *ānchein*, to swell).

anchein, to press tight). An obsolete medical term applied to the severer forms of sore throat.

CYNANCHUM, *si-nān'kūm*. Several drugs, including the knotty, acrid emetic roots of *Cynanchum vincetoxicum*, a once reputed counterpoison; the nausea-producing leaves of *Cynanchum oleaeifolium*, an adulterant of Alexandrian senna; and *Cynanchum monspeliacum*, formerly considered as the source of Montpellier scammony. See ASCLEPIADACEÆ.

CYNWULF, *kin'e-wulf*, or **CYNWOLF**, *kin'wulf* (AS., king wolf) (c.750-c.825). A writer of some of the best Old English or Anglo-Saxon verse: *Juliana*, the story of the martyrdom of St. Juliana; *Elene*, a legend of the discovery of the true cross by the Empress Helena; *Christ*, celebrating the coming of Christ, His ascension, and the day of judgment; the *Fates of the Apostles*; *Andreas*, or the *Legend of St. Andrew*, and probably several other extant Old English poems. There is, however, no good reason for assigning to him (as is sometimes done) the riddles in the Exeter Book. About the poet nothing is positively known beyond what he himself has chosen to tell in his verse. In the first four poems cited above, he wove his name in runes. In the epilogue to *Elene*, he gave a brief sketch of himself, in which he speaks of his sinful youth, his conversion, his old age, and his reflection on poetic themes during the watches of the night. Cook has shown that Cynewulf's life must have been bounded very nearly by the years 750 and 825. It is uncertain whether he lived in Mercia, East Anglia, or Northumbria. Consult. Grein, *Bibliothek der angelsächsischen Poesie*, revised by Wülker (Göttingen, 1883-98), *Christ*, by Gollancz (London, 1892) and by Cook (Boston, 1900); *Juliana* by Strunk (ib., 1905), Root, *The Legend of St. Andrew* (New York, 1899); *The Elene: Trans. into English Prose* by L. H. Hall (ib., 1904); *Legend of St. Juliana* (Princeton, 1906). *The Poems of Cynewulf, Translated into English Prose*, by C. W. Kennedy (New York, 1910).

CYNICS (Lat. *cynicus*, Gk. *κυνικός*, *kynikos*, doglike, cynic, from *κῠωρ*, *kyōn*, dog). The name applied to a school of philosophers founded by Antisthenes, a pupil of Socrates. The main tenet of the extreme Cynics was that civilization is a curse, and true happiness can be obtained only by gratifying the most primary physical appetites which man has in common with the brutes. The general attitude of the Cynics, as distinguished from that of the Stoics, lay in the fact that while the Stoics regarded everything in the external material world with indifference, the Cynics viewed it with contempt. They were not an important philosophical school numerically, but attracted attention largely by their eccentricities and insolence. On account of their contempt for refinement, their name came subsequently to be applied to any one who takes a mean view of human life. The word "cynic" was probably suggested by the Cynosarges gymnasium where Antisthenes taught. See ANTISTHENES; DIOGENES; MENIPPUS.

CYNOCEPHALUS. See BAROON; MANDRILL.

CYNODON, *si'nō-dōn* (Neo-Lat., from Gk. *κυνόδων*, *kynodōn*, or *κυνόδους*, *kynodous*, dog-tooth, from *κῠωρ*, *kyōn*, dog + *ὄδους*, *odous*, tooth). A small genus of grasses, having digitate or racemose spikes, with spikelets on one side, glumes nearly equal, boat-shaped, and containing one floret, which has two awnless paleæ,

the fruit coated with the hardened paleæ. The most important species is *Cynodon dactylon*, a grass very widely diffused, which is the principal fodder grass and best pasture grass of India, where it is the principal covering of many thousands of square miles and is known by the names of Dhoob, Doorba, etc. It is also common in the south of Europe. It is introduced throughout the warmer parts of the world. Its creeping roots have medicinal virtues and are sometimes used as a substitute for sarsaparilla. See BERMUDA GRASS.

CYNOGNATHUS, *si-nōg'nā-thūs* (Neo-Lat., from Gk. *κῠωρ*, *kyōn*, dog + *γνάθος*, *gnathos*, jaw). A large theriodont reptile found fossil in the Karoo formation, of Jurassic age, of South Africa. It belongs to the group Cynodontia, which probably contains the ancestor of the mammals. The skull, which has a length of 16 inches, is, in respect to its form and dentition, remarkably like that of the carnivorous mammals and recalls that of a wolf. The vertebrae, which are 29 in number, are amphiceolous, and the ribs have double articulations. It is perhaps one of the reptiles which have given rise to some of the early mammals. See THERIODONTIA.

CYNOIDEA. See CARNIVORA.

CYNOSARGES, *sin'ō-sār'jēz* (Lat. from Gk. *κυνόσαργες*, *kynosarges*, explained in ancient days as from *κῠωρ*, *kyōn*, dog + *ἀργός*, *argos*, white). A place on the outskirts of ancient Athens, usually regarded as near the present site of the American and British schools of archaeology, northeast of the Acropolis, on the slope of Mount Lycabettos. For a different view, consult Welker, *Athens and its Monuments* (New York, 1913). It contained a number of temples and a gymnasium consecrated to Heracles, at which strangers with but one Athenian parent were obliged to exercise. The philosopher Antisthenes is said to have taught here, and thence his school probably derived the name "Cynic."

CYNOSCEPHALÆ, *sin'ōs-sēf'ā-lē* (Lat., from Gk. *κύνος Κεφαλά*, *Kynos Kephalai*, Dogs' Heads). The name of two hills in eastern Thessaly, where the Thebans under Pelopidas defeated Jason, tyrant of Phærg, 364 B.C., and the Romans, commanded by T. Quinctius Flamininus, defeated Philip V of Macedon, 197 B.C.

CYNOSURE, *si'nō-shōor* or *sin'ō-shōor* (Lat. *Cynosura*, Gk. *Κυνόσουρα*, *Kynosoura*, constellation of Ursa Minor, from *κύνος*, *kynos*, gen. sing. of *κῠωρ*, *kyōn*, dog + *οὐρά*, *oura*, tail). The constellation of which the pole star is the principal star. Milton's lines in "L'Allegro"—

"Where perhaps some beauty lies,
The cynosure of neighboring eyes" —

have made the word popular; the metaphor is grounded on *Ursa Minor* being the constellation towards which the others look, as it were, and round which they wheel.

CYNOSURUS. See DOG'S-TAIL GRASS.

CYNTHIA (Lat., from Gk. *Κυνθία*, *Kynthia*). A surname of Diana (q.v.), from her birth-place, Mount Cynthus, on the island of Delos; and hence a poetic term for the moon. Queen Elizabeth is referred to under this name in Spenser's *Colin Cloute's Come Home Again*, in Fletcher's *Purple Island*, and in Raleigh's poem "Cynthia." See CYNTHIUS.

CYNTHIA MOTH. See AILANTHUS MOTH.

CYNTHIANA, *sin'thi-an'ā*. A city and the county seat of Harrison Co., Ky., 33 miles by

rail north-northeast of Lexington, on the South Licking River and on the Louisville and Nashville Railroad (Map: Kentucky, F 2). It is the centre of a fertile agricultural region and contains distilleries, flour mills, and a tobacco market of repute. The government is administered under a charter of 1893, which provides for a mayor, elected every four years, and a municipal council, chosen biennially. The city owns and operates the water works. Pop., 1900, 3257; 1910, 3603. On June 11, 1864, Gen. John Morgan, with 1800 men, captured Cynthia and, later in the day, defeated 500 Union cavalry under General Hobson; but on the 12th he was in turn defeated by General Burbridge with a force of about 5400, the Union army losing, in killed, wounded, and missing, 414 men, the Confederates about one-third of their number.

CYNTHIA'S REVELS. A comical satire by Ben Jonson, first acted in 1600.

CYNTHIUS (Lat., from Gk. *Kynthios*, *Kynthios*). A surname of Apollo, from his birth-place, Mount Cynthus, in Delos. See CYNTHIA.

CYPERACEÆ, sîp'ê-râ'sê-ê or sîp'ê- (Neo-Lat. nom. pl., from Lat. *cyperos*, *cyperum*, Gk. *κύπερος*, *kypeiros*, sedge), commonly called the sedge family. It is associated with grasses in the order Glumales, the feature of the order being the absence of a perianth and the protection of the flowers by special bracts called glumes. The sedge family is smaller than the grass family, containing about 3200 species under about 75 genera. They are generally thought of as grasses by those who do not know the distinctions between the two families. The general contrasting features are as follows: the sedges have three-ranked leaves and often triangular stems, closed leaf sheaths, no ligules, and solid stems; while the grasses have two-ranked leaves on round stems, open leaf sheaths, ligules, and hollow stems. The greatest differences, however, occur in the flowers of the two families. In the sedges the flowers occur in spikes, consisting of overlapping glumes, and in the axil of each glume there is a flower consisting of three stamens and a solitary carpel, which becomes an achene. This inflorescence is entirely different from that of the grasses.

There are two great series of sedges. In one series the flowers are perfect, so that there is only one kind of flower and one kind of spike. In the other series the flowers are monosporangiate ("unisexual"), which means two kinds of flowers, staminate and pistillate. These two kinds may be in the same spike or in different spikes, and the two kinds of spikes may be on the same plant or different plants (dioecious).

By far the largest and most difficult genus of Cyperaceæ is *Carex*, the common sedges, with more than 1000 species. The other large genera are *Cyperus*, with 600 species; *Rynchospora* (beak rushes), with 200; *Scleria* (nut rushes), with 200; *Eleocharis* (spike rushes), with 150; and *Scirpus* (bulrushes), with 150.

Although sedges resemble grasses, they are by no means so nutritious, and many of them are so rough that they are not eaten by cattle except when very young. Much of the so-called marsh hay is made from sedges, which mostly frequent marshy grounds. See CYPERUS; SCIRPUS; BULRUSH; COTTON GRASS; PAPYRUS.

CYPERUS (Neo-Lat., from Lat. *cyperos*, *cyperum*, Gk. *κύπερος*, *kypeiros*, sedge). A genus of plants of the family Cyperaceæ which contains about 600 species, chiefly tropical, and

gradually decreasing in number towards the colder parts of the globe. Many of the species have tubers or corms, which in some are mucilaginous and nutritious; others contain a bitter principle and possess medicinal qualities. Of the latter class is *Cyperus longus*, or sweet cyperus, one of the species which is common in ditches and wet meadows in some parts of Europe, the rhizome of which has an odor of violets, and is astringent, tonic, and stomachic. It has been employed in medicine from very ancient times, but is now more used in perfumery. Some of the Indian species are also used medicinally and in perfumery in their native country, as well as species of kindred genera. Of those with esculent tubers, the most important is *Cyperus esculentus*. (See CHUFA.) A number of species are frequently grown as house plants, common among which are the umbrella plant, or umbrella palm, *Cyperus alternifolius*, and *Cyperus papyrus*, formerly called *Papyrus antiquorum*, the Egyptian paper plant. See PAPYRUS.

CYPHEL. See HOUSELEEK.

CY-PRÈS, sê'prâ' (OF., as near). In English and American law, a rule of interpretation whereby a testamentary gift which cannot take effect in the precise manner intended by the testator is given an effect as nearly as possible like that which was intended. The doctrine has been applied in two classes of cases.

In the Creation of Fee-Tail Estates.—It is an established rule of real-property law that a gift of land by way of remainder to the issue of an unborn person is void if it follow a gift of a life estate in the same property by the same instrument to such unborn person himself. But if the gifts be made by will, the remainder to the issue may be saved by construing the life estate of such unborn person as a fee tail, in which case it is capable of descending to the issue as tenant in tail. See FEE TAIL; ESTATE.

In Charitable Gifts.—Where the object of a charitable gift fails, as by the dying out of the entire class of persons intended as beneficiaries of the charity, or where a charitable gift might be void in consequence of the indefiniteness of the charity or the operation of the rule against perpetuities, the Court of Chancery may direct the application of the property to another or to a specific charity. Thus, in the first case, a testamentary gift for the emancipation of slaves in the United States might, after the abolition of slavery, be devoted under the cy-près doctrine to the education of emancipated slaves; and, in the second case, a charitable gift for the benefit of the American Zionist Society—there being no such society in existence and there being a possibility that it may not come into existence within the period fixed by the rule against perpetuities—may be applied to the purposes which the testator had in mind, through the agency of any other society having similar aims and competent to make a beneficial disposition thereof.

It is in cases of charitable gifts that the cy-près doctrine finds most of its applications in the United States. It has been repudiated in several of the States, but in most of them it exists, and in New York, where it had for many years been in abeyance, it has recently been revived by statute. It is generally considered a salutary doctrine, as tending to preserve to charity a gift clearly intended for benevolent purposes, and as effectuating the general intention of the testator, even though the particular

CYPRESS, ETC.



1. MONTEREY CYPRESS (*Cupressus macrocarpon*).
2. BROOM (*Cytisus scoparius*).
3. CUBEBS (*Piper cubeba*).

4. AN ORNAMENTAL CROTON (*Croton Cooperi*).
5. RED CURRANTS (*Ribes rubrum*).
6. NUT GRASS (*Cyperus rotundus*).

intention entertained by him cannot be carried into effect. See CHARITABLE TRUSTS; PERPETUITIES; TRUST; INTERPRETATION; WILL; and the authorities referred to under those titles.

CYPRESS (Fr. *cyprès*, Lat. *cupressus*, Gk. *κυπάρισσος*, *kyparissos*; connected by some with Heb. *gopher*, a sort of tree, ASSYR. *gipûru*, reed, canebrake). Evergreen trees and shrubs of the coniferous genus *Cupressus* and of the tribe Cupressineæ. They have small, often appressed, and imbricate opposite leaves and globular cones of a few thickened scales. There are about a dozen species, natives of Europe, Asia, and the western part of North America. One of the best known is the common cypress of the south of Europe (*Cupressus sempervirens*), and introduced into England and parts of the United States—a tree which attains a height of 80 feet and is famous alike for the great age it reaches and for the durability of its wood. The wood is red or yellowish, hard, compact, and durable. It is not subject to attacks of insects and was once in great demand for cabinetwork. It is believed to be the cedar wood of Scriptures and possibly the gopher wood also. Museum specimens of the wood are known to be several thousand years old, and the old doors of St. Peter's at Rome lasted for more than 1100 years until replaced by doors of bronze. Medicinal virtues were once attributed to the wood, but its present use is for cabinetwork and musical instruments. Perhaps the finest tree of this genus is *Cupressus macrocarpa*, the Monterey cypress of California. It is a beautifully symmetrical tree, attaining a height of 150 feet and a circumference of trunk of 8 to 10 feet. It grows rapidly, even on poor soils, and thrives best near the sea. It is not very hardy; freezing temperatures are fatal to it. A small tree (*Cupressus macnabiana*) of California is much hardier. *Cupressus funebris*, of China, has wide-spreading and often pendulous branches; it attains a height of 60 feet, and has been extensively planted as an ornament in regions adapted to it. *Cupressus glauca* is common ornamentally in the south of Europe, where it is known as cedar of Goa. *Cupressus torulosa* is a valuable species found in the north of India. *Thuja obtusa*, a related species of Japan, is hardy, attains a height of 100 feet, has a hard, close-grained, durable wood, which is considered of great value in Japan, where the tree is abundant in the forests. It is hardy in the latitude of New York, and some of its varieties are of great beauty. Other species occur in Japan, Mexico, and the United States. Among the best-known species are the yellow cedar (*Cupressus nootkatensis*), and Port Orford cedar (*Cupressus lawsoniana*), both of the Pacific coast region. The bald or southern cypress (*Taxodium distichum*) is a tall tree with deciduous leaves which occurs abundantly in the swamps from Maryland to Missouri and south to the Gulf of Mexico. The timber of this tree is valuable for many purposes. It works easily and is commonly used for shingles. In water it is very durable. When growing in wet places curious, conical, hollow upward growths, called "knees," rise from the roots. Their function is to aerate the roots when submerged temporarily by water. Permanent submergence kills the trees. The tree will grow in dry places and is frequently planted as an ornament as well as for its timber. For illustration of a California cypress tree, see Plate of CYCADS AND CYPRESS. For fossil forms

of cypress, see CONIFERÆ. Consult Masters, "A General View of the Genus *Cupressus*," in *Journal of the Linnean Society*, vol. xxxi (1896).

CYPRESS SWAMPS. Swamps of the southeastern United States in which the bald cypress (*Taxodium distichum*) is one of the dominant trees. See SWAMP.

CYPRESS VINE. See IPOMŒA.

CYPRIA (Lat. from Gk. *Κύπρια*, **Kypria*, from *Κύπρος*, *Kypros*, Cyprus). The title of a poem once ascribed to Homer, but declared by Herodotus not to be his, and later attributed to Stasinus. It relates the causes leading to the Trojan War, and so is a sort of preface to the *Iliad*. See CYCLIC POETS.

CYPRIAN. A name sometimes given to a courtesan as being a follower of Venus, the Cyprus-born goddess of love.

CYPRIANUS, or **CYPRIAN**, THASCUS CÆCILIVS, SAINT (c.200–258). The great leader of the early African church. He was born in North Africa and was of a wealthy family. His training had been in the law, and he had attained prominence as a teacher of rhetoric at Carthage. Up to 246, when in middle life, he had been a pagan. Then he applied for admission to the Christian Church as a catechumen and after instruction was baptized. Such a man was a great gain to the Church. He soon gave evidence of his piety by voluntarily parting with his property and giving the proceeds to the poor. In 247 he was made a presbyter, and in 248 Bishop of Carthage. He owed his rapid elevation to his high character, his noteworthy gifts of administration, and to the promise he gave of being a devoted leader. These hopes he did not belie. No sooner had he become accustomed to the duties of his high office than the peace which the Church had enjoyed for many years was broken by the sudden exhibition of zeal for the old faith on the part of the Emperor Decius. By the Imperial decree of 249 Christianity became a forbidden religion; its profession meant confiscation, torture, exile, even death, and bishops had a price set upon their heads. Not from cowardice, but from the conviction that it was better for him to continue to guide his flock, which he thought he could do as well out of Carthage as in it, in January, 250, he went into retirement—not exactly concealment, because it must have been easy for the authorities to find him if they wished. Thus he lived 14 months and then as calmly returned to Carthage. His time had been well spent, and the fruits of it appear in his preserved correspondence and treatises. But when once more in the city he saw for himself the desolation the persecution had caused. Many had denied the faith or pretended to do so, many had abandoned their homes, many had died. The more pressing question related to the treatment to be accorded the "lapsed," whom he treated sternly and commanded to repent and show contrition; then he would receive them. (See LAPSEN.) He had indeed dealt with the matter while in retirement, but now he must take a more decided stand. In March, 251, he held his first council at Carthage, in which he yielded somewhat to his opponents, who had grown stronger in his absence. The relation between Stephen, the Bishop of Rome, and the Bishop of Carthage is the most interesting point. They differ upon the important matter of the reception into the Church upon their renunciation of heresy of those who had been baptized by heretics.

Stephen—and this was the Roman and ultimately the general position—did not re-baptize such, while Cyprian did. The controversy was sharp and even acrimonious. Stephen called Cyprian a pseudo-Christian; Cyprian called Stephen a schismatic.

The episcopate of Cyprian was indeed a troubled one; heretics, schismatics, feeble, timid Christians, scheming, ambitious leaders, and, to add to the turmoil, the horrors of pestilence—all these must have greatly worried the Bishop. But he did much to strengthen the episcopate as an institution, and make Church councils part of the regular machinery of the Church. He held seven councils, the last in 256. But the end which he had long anticipated was very near. In August, 257, persecution once more broke out, this time under Valerian, the successor of Decius, and Cyprian was apprehended. He was treated with the utmost tenderness, for manifestly the officers were discharging a very disagreeable duty. He was brought before the proconsul (Aug. 30, 257), required to sacrifice to the gods, and on his refusal banished to Curubis, a free town near the sea (modern Xurbo), 50 miles southeast of Carthage. There he lived, attended by many friends and active in his episcopal duties, for 11 months, when he was recalled to Carthage and lived for a while in his own home. On Sept. 13, 258, he was again arrested, brought before the consuls, sternly questioned, and sentenced to death. "Our pleasure is that Thascius Cyprianus be executed by the sword," to which Cyprian only said, "Thanks be to God." On September 14 the sentence was carried out.

The writings of Cyprian are most interesting and handle a great variety of topics. The 82 letters are the most important, but the treatises on the "Unity of the Church," the "Dress of Virgins," the "Lapsed," the "Lord's Prayer," the "Vanity of Idols," "Against the Jews," are very instructive. The best edition of his writings is by G. Hartel (3 vols. Vienna, 1868-71); there is an English translation in *The Ante-Nicene Fathers*, vol. v (Buffalo, 1880-96). Consult A. Harnack, *Drei wenig beachtete cyprische Schriften und die Acta Pauli* (Leipzig, 1899); Von Soden, *Die cyprische Briefsammlung* (i., 1904), and for his life E. W. Benson (London and New York, 1897); Faulkner (Cincinnati and New York, 1906).

CYPRINE, *sip'rín* or *-rín* (Lat. *cyprinus*, *cuprinus*, from *cuprum*, copper). A name given to a pale sky-blue or greenish-blue variety of vesuvianite. Its color is said to be caused by a small amount of copper, whence its name.

CYPRINIDÆ (Neo-Lat. nom. pl., from Lat. *cyprinus*, Gk. *κυπρίνος*, *kyprinos*, carp). A family of soft-rayed fishes inhabiting the fresh waters of North America, eastern Asia, and Africa. The head is naked, and the body, with a few exceptions, is covered with cycloid scales. The mouth bears no teeth, but the pharyngeal bones bear from one to three series of teeth, with a maximum of seven teeth in the main series. There are about 200 genera and 1000 species. They are usually very numerous in individuals. With exceptions like the gold fish, they are not highly colored. The males often differ from the females during the spawning season, not only in additional colors, but in the growth of tubercles on the head, fins, and other parts of the body. The family includes such familiar fish as the chub, dace, carp, tench, bleak, bream, barbel,

minnow, goldfish, roach, loach, etc. Most of the North American species are small, under 12 inches in length. The Old World forms and some of the Pacific coast species grow to a much larger proportion and are often important as food. All important kinds are described elsewhere under their English names. See CARP.

CYPRINODONTIDÆ (Neo-Lat., from Gk. *κυπρίνος*, *kyprinos*, carp + *ὄδους*, *odous*, tooth). A large family of soft-rayed fishes closely related to the Cyprinidæ (q.v.), with which they were formerly placed. The body is elongate, compressed behind and usually depressed at the head, and both are covered with rather large cycloid scales. The mouth is small, extremely protractile, and provided with small teeth; the lower jaw usually projects, and the pharyngeal bones are not armed, as in the Cyprinidæ. The sexes are usually unlike, and some of the species are viviparous. In these the anal fin of the male is modified into an intromittent organ. The species are numerous, but none attains a large size, and some are extremely small. They inhabit the fresh-water streams, brackish waters and bays of America, southern Europe, Africa, and Asia. The family includes the top minnows, mummichog, killifish, etc., and the interesting anableps, or four-eyed fish. Many of the species are extremely resistant and have become adapted to very diverse habitats. See MINNOW; and Plate of KILLIFISHES AND TOP MINNOWS.

CYPRIOTES, *sip'ri-ōts* (from Lat. *Cyprus*, Cyprian, from *Cyprus*, Gk. *Κύπρος*, *Kypros*, Cyprus; Turk. *Kıbrıs*). Natives or inhabitants of Cyprus. Since there appears to have existed at least as early as 4000 B.C. an indigenous civilization in the island of Cyprus, the creative and stimulative influences of which are discoverable all over the eastern Mediterranean, the relationship of its ancient inhabitants is a question of great importance. The idea that they were simply Semitic Phœnicians is being abandoned, since the civilization of the latter may very well have been derived from Cyprus, and not vice versa. Some of the latest authorities, like Ohnefalsch-Richter and Sergi, regard the autochthonous civilization of Cyprus as belonging, with the prehistoric Egyptian, to the Afro-Mediterranean or "Afro-European" culture centre, and its originators physically to the North African white race. Asiatic influence as such is later.

The literature about the Cypriotes and their culture is listed up to date in Cobham, *Bibliography of Cyprus* (London, 1900). The ethnological questions involved have been discussed by Ohnefalsch-Richter, in his article in the *Verhandlungen der Berliner Gesellschaft für Anthropologie* for 1899 and by Sergi in his *Mediterranean Race* (London, 1901).

CYPRIPEDIUM. See LADY'S-SLIPPER.

CYPRUS (Lat., from Gk. *Κύπρος*, *Kypros*). The third largest island in the Mediterranean, in the northeast of that sea, nearly equidistant from Asia Minor on the north and Syria on the east, 40 miles from the former and about 60 miles from the latter (Map: Turkey in Asia, E 5). It is 140 miles long and 60 miles wide. Area, 3584 square miles. Cyprus formerly belonged to the Ottoman Empire, but since July 12, 1878, has been under British control. Two mountain ranges extend from east to west in northern and southern Cyprus respectively. The southern uplift is the more important of the two. Its highest summit is that of Mount Troodos,

about 6400 feet. This range terminates in the isolated peak of Oros Stavro, or Hill of the Holy Cross, a conspicuous landmark from Larnaca, and evidently the peak called Olympus by Strabo, although it is but 2260 feet high. The northern range is an unbroken ridge for 90 miles, inferior in elevation to the other, its highest summits not exceeding 3200 feet. Between these ranges is a broad plain extending across the island from the Bay of Famagusta to that of Morphou on the west, about 60 miles long and from 10 to 20 miles wide. This plain is called Messaria and is watered by two streams, the Pedias and Ialías. It is bare of timber, forests, mostly pine, being confined to the mountainous areas. The climate is generally healthy and dry except along the coast in summer. In the central plain and about Larnaca the heat is excessive, but is tempered by cool sea breezes until about the middle of September, between which time and the end of October is the hottest period. The winter is short and cold, but snow is seldom seen except upon high mountain peaks. Fevers are prevalent during the warm months.

In ancient times Cyprus supplied the Greek monarchs of Egypt with timber for their fleets. It was also celebrated for its copper, a metal which takes its name (*cuprum*) from the name of the island, but little work has been done in modern times. Silver also was produced; Pliny says precious stones were found there. Salt working, an ancient industry, is still carried on near Larnaca and Limassol. Gypsum, terra umbra, and asbestos are the chief minerals found. The majority of the rivers dry up in summer, being only mountain torrents fed by rains and melting snows. The Pedias and the Ialías are the most important. None is navigable.

Agriculture is the main industry; the chief products are cereals, carobs, wine and spirits, fruits and vegetables, linseed, aniseed, and cotton. Cattle, sheep, donkeys, and mules are raised; cheese, wool, and silk are produced for export. The development of the agricultural industries has been hindered by lack of water; but an irrigation scheme carried out by an Indian government engineer, the introduction of special machinery and implements, and compulsory reafforestation have done much towards bringing the soil to a high state of cultivation. Sponge fishing is remunerative, but sea fishing has declined. The imports, consisting mainly of cottons, flour, woollens, sugar, rice, petroleum, tobacco, minerals, etc., were valued, exclusive of specie, for 1911 at £547,772 (£402,961 in 1902); and the exports at £626,557 (£271,098 in 1902). The main articles of export (1911) were carobs, £182,883; live animals, £94,932; barley, £56,415; wine, £53,685; raisins, £29,636; silk cocoons, £27,587; raw cotton, £22,593; fruits, £21,585; vegetables, £14,106; wool, £13,452; hides and skins, £10,735; etc.

The formation of the coast line is unfavorable to commercial development, as there are few harbors. The Famagusta harbor was completed in June, 1906. Improvements were subsequently introduced to make it accessible to large steamers, an area 900 by 600 feet having been dredged, up to 1913, to a depth of 24 feet at low water; the channel of approach is 250 feet wide and 26 feet deep. The town, little more than a fortified ruin, is to be rebuilt and expanded. Its population in 1911 was 5327.

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Larnaca (9262 inhabitants) and Limassol (10,302) are open roadsteads. An extension of the pier at Larnaca was completed in 1909. The ancient harbor at Paphos, the old capital of Paphos, has been dredged to admit coasting craft. Nicosia (Lefkosia), with 16,052 inhabitants, is situated near the centre of the island and is the capital. The six administrative districts are Nicosia (capital, Nicosia), Larnaca (Larnaca), Limassol (Limassol), Famagusta (Famagusta), Paphos (Ktima, with 3091 inhabitants), and Kyrenia (Kyrenia, with 1726). A government railway from Famagusta to Nicosia (36 miles) was opened to traffic in August, 1905, and was subsequently extended to Morphou, a total distance of 60 miles. Telegraphic communication is maintained between the principal towns and by cable with Egypt by the Eastern Telegraph Company, Ltd.; the Imperial Ottoman Telegraph Administration has a cable to the coast of Asia Minor. Good roads connect the important towns and villages.

By the Convention of June 4, 1878, between the British government and the Ottoman Empire, the former promised to defend Asiatic Turkey against further aggression by Russia, in return for the permission to occupy Cyprus. Sir Garnet Wolseley was appointed Governor, and was installed as administrator, July 23. The head of the administration is the high commissioner, who is assisted by an executive council consisting of three office-holders, and a legislative council of 18 members, one-third of whom are office-holders, the rest are elected on a property qualification, three by the Mohammedan and nine by the non-Mohammedan population. The municipalities are administered by elected councils. Education is to some extent controlled by the government and is chiefly of an elementary character. The total number of elementary schools in 1911-12 was 595 (191 Moslem, 404 Christian), with a total enrollment of 31,780 (5926 Moslems, 25,854 Christians). Government aid amounted to £6110. Justice is administered by a supreme court, assize, district magistrate, and village courts, all of them, with the exception of the first, having natives for judges. The chief sources of revenue are tithes on cereals grown on the island, which are paid in kind, taxes on property, salt monopoly, customs, excise, export dues, etc. The revenue was £319,572 in 1911-12, and the expenditure £235,256. Under the terms of the Convention of 1878 the sum of £92,800 annually was payable to the Porte; it was not actually paid over, however, but was retained and applied to the interest on the guaranteed loan of 1855. Cyprus was definitely ceded to Great Britain in 1913. The currency consists of English, Turkish, French, and native coins. The Imperial Ottoman Bank has branches on the island. The weights and measures are Turkish.

The population by districts follows, census of 1911: Nicosia, 81,497 (56,300 in 1881); Famagusta, 58,530 (38,207); Larnaca, 29,737 (20,766); Limassol, 46,084 (28,717); Paphos, 38,508 (28,424); Kyrenia, 19,752 (13,216)—total, 274,108 (185,630). About 25.9 per cent of the people are Mohammedans; the majority of the remainder belong to the Cypriote church, an autocephalous branch of the Orthodox Greek.

The early civilization of the island is known only from the excavations of recent years, which have thrown little light on the ethnic affinities of the primitive inhabitants. (See *CYPRIOTES*.)

There are but scanty traces of the Stone age, but the Bronze age (c.3000-1000 B.C.), both in the earlier period when pure copper is used and in the later period after the introduction of tin and the making of bronze, is characterized by a well-developed and clearly marked civilization, presenting close analogies to that represented in the lower strata at Troy (Cyprus was one of the chief early sources of supply for copper; see COPPER). The people seem to have been pastoral and to have avoided the mountains and forests. They early learned to work the rich copper mines of the island, and seem to have been somewhat in advance of their neighbors in Syria and on the islands of the Aegean. From its situation, Cyprus was exposed to foreign influences and seems to have served as intermediary between Egypt and Syria and the Mycenaean civilization of the West. The Mycenaean (Late Minoan) civilization seems to have reached the island about 1600 B.C. and to have continued for about 800 years. Whether it was introduced by Greek colonists is uncertain, but these colonists certainly came to the island before the Dorians had occupied Peloponnesus, and before the introduction of the later Greek alphabet; for they spoke a dialect closely akin to that of the Arcadians and used a clumsy syllabic mode of writing, akin to that of Crete. The Greek and Phœnician settlements belong to the Iron age; the latter are found chiefly along the southern coast, where they remained predominant in Citium, Amathus, and Marion even in later times. The Greeks at first settled along the northern shores and at the eastern and western extremities of the great plain which crosses the island at Amathus, Salamis, Soli, and later predominated in Paphos, Curium, and Lapathus. Whether the worship of Aphrodite, which flourished greatly in Cyprus, developed from that of a nude nature goddess of the original inhabitants or from that of the Phœnician Astarte is uncertain, but it reached the greatest splendor and sensuality among the Greeks, who regarded Cyprus as specially favored by the goddess. The island was invaded by Thothmes III of Egypt, about 1500 B.C., and was forced to pay tribute. In the eighth century before Christ it was tributary to the Assyrians. In the sixth century it was conquered by Amasis of Egypt, on the conquest of Egypt by Cambyyses it passed under Persian rule. The Greeks of Cyprus joined in the Ionic revolt against Persia (500 B.C.), but were conquered, and Cypriote vessels were in the fleet of Xerxes. The attempt of Cimon (q.v.) to bring Cyprus into the Athenian League was unsuccessful, and the island remained tributary until Evagoras (q.v.) became King of Salamis (410-374 B.C.), made himself master of much of the island, and nearly succeeded in casting off the Persian yoke. After the battle of Issus, when Alexander advanced into Phœnicia, all the cities of Cyprus declared in his favor and sent ships to assist him in the siege of Tyre. Under the Persian rule the cities had been allowed a large measure of self-government under the control of kings, who seem to have claimed descent from heroic ancestors. After the death of Alexander the island, so important for its seemingly inexhaustible forests (it is now quite bare of trees), became an object of contention among his successors, being especially sought by Antigonus and Ptolemy I. It finally passed into the hands of the latter and was for a long time

a valued dependency of Egypt. In 58-57 B.C. the tribune Clodius proposed, and Cato effected, its annexation by Rome. Under Augustus it was made a proconsular province and from this time is scarcely mentioned in ancient history. Cyprus is noticed in Acts iv. 36, where it is mentioned as the native place of Barnabas; and in Acts xi. 19-20 it appears prominently in connection with the earliest spreading of Christianity. During the reign of Trajan (116 A.D.) it was the scene of a rising of the Jews, who are said to have killed 240,000 of the other inhabitants. After the division of the Roman Empire Cyprus passed under the Byzantine emperors. In 646 the Arabs became masters and destroyed the city of Salamis. Two years later the Greeks recovered sway; but in 802 it was again conquered by Harun al-Rashid, who was soon compelled to relinquish it to the Byzantine rulers. In 1184 Isaac Comnenus made Cyprus an independent sovereignty. In 1191 Richard of England ejected Comnenus because he had ill-treated the Crusaders, and in 1193 put Guy de Lusignan in possession as compensation for the loss of Jerusalem, of which Guy had been appointed King. For three centuries, under this dynasty, the feudal system flourished in Cyprus, the cities of Nicosia and Famagusta were adorned with churches, splendid even in their ruins, and the island seems to have been rich and prosperous. Through the Venetian Catarina Cornaro, the wife of James II, the Republic of Venice came into full possession of the island in 1489, after the death of James and his son, James III, and held it for about 80 years. In 1570 the Turks invaded Cyprus, quickly subdued the country districts, took the capital (Nicosia) after a siege, and murdered 20,000 of its inhabitants. Famagusta held out for a year and then made a capitulation, which was immediately violated by the Moslem general, who slowly tortured to death the governor of the city. From that period Cyprus continued a part of the Turkish Empire. In 1878 it was placed under English control by a treaty which recognized the sovereignty of the Sultan and assured him an annual income of £92,746. In 1882 a new constitution was promulgated, and under English rule the prosperity of the island has greatly increased.

The antiquities of the island have repeatedly been the subject of exploration; at first these efforts were largely unscientific and inaccurate, conducted chiefly for the purpose of obtaining booty. Of the earlier excavations the most productive were those of L. P. di Cesnola (q.v.), whose collections are for the most part in the Metropolitan Museum in New York. Later excavations in the modern scientific method have been conducted by the Cyprus Exploration Fund, the British Museum, Ohnefalsch-Richter, and others. Consult *Excavations in Cyprus*, published by the British Museum (London, 1900). See also *IDALIUM*; *LAENAKA*; *PAPHO*; the second *SALAMIS*.

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treats well the ancient history of the island (Berlin, 1841); Cesnola, *Cyprus: Its Cities, Tombs, and Temples* (New York, 1878); id., *Salamina* (London, 1882); *A Descriptive Atlas of the Cesnola Collection* (New York, 1885); Perrot and Chipiez, *Histoire de l'art antique*, vol. iii (Paris, 1884; Eng. trans. by Armstrong, London, 1885); Ohnefalsch-Richter, *Cyprus, the Bible, and Homer* (ib., 1893); Myres and Ohnefalsch-Richter, *A Catalogue of the Cyprus Museum, with a Chronicle of Excavations since the British Occupation, and Introductory Notes on Cypriote Archaeology* (Oxford, 1899); Oberhummer, *Die Insel Cypern* (Munich, 1903 and later). The inscriptions in the Cypriote dialect are published in Collitz, *Sammlung der griechischen Dialekt-Inschriften*, vol. i (Göttingen, 1884); Schmidt, *Sammlung kyprischer Inschriften in epichorischer Schrift* (Jena, 1876); Deecke, *Die griechisch-kyprischen Inschriften* (Göttingen, 1883); consult also Larfeld, *Griechische Epigraphik* (Munich, 1914). For the coins of Cyprus, consult Hill, *British Museum Catalogue, Coins of Cyprus* (London, 1904).

CYRANO DE BERGERAC, sê'râ'nô' dō bâr'zh-râk'. See BERGERAC.

CYRANO DE BERGERAC. An opera by Walter Damrosch (q.v.), first produced in New York, Feb. 27, 1913.

CYRENAICA (Lat., from Gk. *Κυρηναία*, *Kyrēnaika*). The name of the district whose capital was Cyrene (q.v.) It comprised the table-land on the north coast of Africa from the Great Syrtis to the promontory of Ardanus (Râs el-Mellah), though its boundaries fluctuated according to the degree of subjection in which the neighboring tribes were held. This plateau of Cyrenaica was, and still is, one of the loveliest and most agreeable regions of the world. The climate is delicious, mountains on the south sheltering the land from the scorching blasts of the Sahara, and cool sea winds fanning it on the north. From the central plateau, whose breadth is about 80 miles, the land slopes down in verdant terraces to the Mediterranean. These terraces are cut and watered by mountain streams, forming luxuriant ravines. The productions of Cyrenaica mentioned by ancient writers are wheat, oil, wine, honey, fruits of all kinds, cucumbers, trifles, cabbage, flowers yielding the richest perfumes: and a plant called *silphium*. This plant, which was figured on the coins of Cyrene, has not been identified. The country was also celebrated for its breed of horses, but was much exposed to the ravages of locusts.

The chief cities of Cyrenaica were Cyrene, Taucheira (afterward called Arsinoë), Hesperides (afterward called Berenice), Barca, and Apollonia. Since it possessed five cities, in the time of the Ptolemies Cyrenaica was named Pentapolis and Pentapolitana Regia. To each city a certain amount of territory was attached. This favored their individual independence: and the consequence was that the dynasty of Battus, who led the first Greek colony to Cyrene (q.v.), exercised very little influence over Cyrenaica in general. After the death of Alexander the Great Cyrenaica became part of the Egyptian kingdom under the Ptolemies: in the second century B.C. it was a separate kingdom under a branch of the Ptolemaic family. In 96 B.C. it was bequeathed to the Romans by Apion, the last King, and shortly afterward was united with Crete as a Roman province. It continued

to prosper for some time, but with the increasing weakness of the Eastern Empire, to which it belonged, was more and more exposed to the encroachments of the desert tribes, and in 647 A.D. was overrun by the Arabs. Ancient Cyrenaica nearly corresponds to modern Barca (q.v.).

CYRENAÏC SCHOOL. A school of philosophy established by the followers of Socrates upon his death. Aristippus of Cyrene, its founder, taught that pleasure was the highest good, thus developing one side of the Socratic teaching to the exclusion of all others. Virtue for this school meant the course of life that secured the greatest enjoyment. For this, wisdom is necessary, since the pursuit of pleasure, prompted by instincts and impulses as they arise, often defeats itself. The wise man is the man who knows how he can obtain the maximum of enjoyment and who acts upon this knowledge. This doctrine received various modifications according to the view its adherents took as to the way in which the hedonistic end is attainable. Thus Theodorus insisted that in the form, not of the pleasure of the moment, but of enduring joy or "cheerful frame of mind," can true satisfaction be obtained. Hegesias urged that an excess of pleasure over pain is unattainable, hence the true end of human endeavor is to minimize the discomforts of life, and he carried this doctrine to its logical outcome, that death is preferable to life: hence he was called the "recommender of death." This is perhaps the earliest appearance of pessimism (q.v.) in Occidental philosophy. On the other hand, Anniceris maintained that in the search for pleasure the friendly, social, filial, patriotic man is most highly successful, and thus went far towards carrying egoistic hedonism beyond its most obvious limitations. The Cyrenaic school was the precursor of the Epicurean (q.v.). Consult Watson, *Hedonistic Theories from Aristippus to Spencer* (Glasgow, 1895), and the authorities referred to in the article on ETHICS. See ETHICS, HEDONISM, UTILITARIANISM.

CYRENE, si-rē'nē (Lat., from Gk. *Κυρήνη*, *Kyrēnē*). In ancient geography, the capital of Cyrenaica, in northern Africa, situated about 10 miles distant from the coast and 1800 feet above sea level (Map: Roman Empire, with article ROME, E 3). It is said to have been founded in 631 B.C., by Battus and a body of Dorian colonists from the island of Thera. (See BATTIADÆ.) After the expulsion of the Battiade, about 450 B.C., Cyrene had varying forms of government, republic and tyranny interchanging. The city submitted to Alexander in 331 B.C.; shortly afterward it passed into the control of the Ptolemies. (For its later history, see CYRENAICA.) For centuries the site has been without permanent inhabitants. In ancient days Cyrene carried on an extensive commerce with Egypt and Greece and was the birthplace of many distinguished men—the philosophers Aristippus and Carneades, the poet Callimachus, the astronomer Eratosthenes, and Bishop Synesius. Between 1703 and 1910 the site had been visited by various travelers. Explorations and excavations were made in 1821–22, and again in 1861, on the latter occasion in behalf of the British Museum. For a report of the latter excavations, consult Smith and Porcher, *Discoveries in Cyrene* (London, 1864). For earlier visits, consult Barth, *Wanderungen durch die Küstenländer des Mittelmeers* (1849), and

Hamilton, *Wanderings in North Africa* (1851). In May, 1910, a firman was issued to a representative of the Archaeological Institute of America for the excavation of Cyrene, and the sum of \$15,000 a year for three years was subscribed by members of the Institute. From October, 1910, to May, 1911, excavations were conducted at the site. On a hill believed to be the site of the ancient acropolis Greek and Roman walls were uncovered, and many small objects were discovered. It was found that a circle with the acropolis as its centre and a radius of 5 miles would not cover all the terraces, tombs, buildings, and reservoirs in sight. For a popular account of these excavations, consult the *Bulletin of the Archaeological Institute of America*, ii (1910-11). Later work uncovered a group of Ptolemaic buildings, and 3000 terra cotta and some fine sculptures were found. Work was then suspended because of the war between Italy and Turkey in Africa. Consult Robinson, "Inscriptions from the Cyrenaica," in *American Journal of Archaeology*, 2d series, vol. xvii (1913).

CYRILIACUS, or CIRIACO DE' PIZZICOLLI (1391-c.1449). One of the most diligent antiquarians of the Renaissance in Italy. He was born at Ancona. He early entered upon the life of a merchant, which enabled him to gratify his passion for travel. Led by his admiration for Dante to Vergil, and thence to Homer, he turned to the study of the classics and devoted his travels to the enthusiastic study and description of the remains of the past. He visited Syria, Egypt, the islands of the Ægean, and finally Athens and the mainland of Greece, everywhere purchasing manuscripts, coins, and works of art, copying inscriptions, sketching and describing roads, walls, buildings, and any other evidences of the life of ancient Greece. His notes and drawings were collected in three large folio volumes, but after his death, which occurred about 1449, they became scattered and now are known only by fragments or partial copies. Though Cyriacus never became a thoroughly learned man and often made ludicrous mistakes, his breadth of interest and untiring zeal led him to copy much that others neglected, and to him we owe our knowledge of many inscriptions and monuments which have since disappeared. Consult: Voigt, *Wiederbelebung des klassischen Altertums*, vol. i (Berlin, 1893). Jahn, "Cyriacus von Ancona und Albrecht Dürer," in *Aus der Altertumswissenschaft* (Bonn, 1868). Sandys, *A History of Classical Scholarship*, vol. ii (Cambridge, 1908).

CYRIL, sir'īl (Lat. *Cyrillus*, Gk. *Κύριλλος*, Kyrillos). SAINT (c.376-444). A bishop of Alexandria, one of the most energetic but least amiable of the Church fathers. He was born in Alexandria and was educated in the desert, 65 miles south of Alexandria, by the cenobitic monks of Nitria, with whom he lived for five years, and who probably inspired him with that fiery, intolerant, and impetuous zeal which characterized him through life. Subsequently he went to Alexandria, where he became a presbyter, and on the death of his uncle, Theophilus (412 A.D.), obtained the episcopal see. The Alexandrian Jews, who were numerous and riotous, were the first to feel the effects of his inflexible character. Some Christian blood having been shed by them in a city tumult, Cyril put himself at the head of a rabble of zealots, attacked the Jewish quarter of Alexandria, de-

stroyed the houses, and banished the inhabitants. Orestes, the Prefect of Egypt, having drawn up an accusation against Cyril, was attacked in the streets by 500 monks, who had come up from the deserts of Nitria, at the call of their old companion, ready to defend him against his foes. One of these monks having fallen in the skirmish, his corpse was carried in procession to the high church of Alexandria, where Cyril delivered a sanguinary discourse, gave the dead monk the name of Thaumasius ('the excellent'), and pronounced him a martyr and a saint. The violent death of Hypatia (q.v.), the famous woman philosopher of Alexandria, a friend of the Prefect Orestes, at the hands of a mob, has often been laid to the charge of Cyril, but perhaps all that can be justly alleged against him is that he was in great measure responsible for the riotous conditions which led up to this deplorable event. But the most important historic event in his career was his controversy with Nestorius (q.v.), whose doctrines were condemned by the Council of Ephesus, presided over by Cyril (431). All the sternest features of his disposition appeared in this contest. In the midst of disquietudes, which he himself had largely occasioned, he died June 9, 444 A.D. In the Greek church his day in the calendar of saints is June 9, in the Latin church January 28. Cyril's numerous writings consist of commentaries, treatises, homilies, epistles, etc. The best edition was published by Jean Aubert (Paris, 1638, reprinted in Migne, *Patrol. Græca*, lxxviii-lxxvii). Certain of his works have been published in critical editions by English scholars, among them his commentaries on Luke (1859). John (1872). Minor Prophets (1868). *Five Times against Nestorius* (1881), and his *Scholia on the Incarnation* (London, 1907). For his biography, consult Kopallik (Mayence, 1881). Charles Kingsley's brilliant romance *Hypatia* gives a view of Cyril tinged with the author's prejudices against monasticism.

CYRIL, SAINT (c.315-386). A bishop of Jerusalem and an eminent Church father. He was born in Jerusalem about 315 A.D., and ordained a deacon in 334, a presbyter in 345, and on the death of Maximus, in 351 was elected Bishop of his native city. His metropolitan was the Arian Bishop Acacius of Cæsarea, with whom he was soon engaged in hot conflict concerning originally the rights of his office, but ultimately their differences of doctrine. Acacius accused Cyril before a council at Cæsarea in 358, whose competency Cyril did not acknowledge, of selling the treasures of his church in a time of famine to feed the poor, and this Arianizing assembly undertook to depose him. He appealed to a larger synod, which was held at Seleucia (359), and was by it restored to his office; but once more, through the persevering hostility of Acacius, he was deposed by a council assembled in Constantinople in 360. On the death of the Emperor Constantius (361) he was again restored to his episcopate. Soon after his old enemy Acacius died, but Cyril was immediately involved in new difficulties, and was banished, by the Emperor Valens, in 367; he returned after the Emperor's death in 378. He died March 18, 386.

Cyril's writings are extremely valuable for the history of theology and ritual. They consist of 23 treatises, 18 of which are addressed to catechumens and five to the newly baptized.

The former are for the most part doctrinal and present to us in a more complete and systematic manner than the writings of any other father the creed of the Church; the latter are ritual and give us a minute account of baptism, chrism, and the Lord's Supper. Their style is simple and unattractive. Cyril's works were published by A. A. Touttée, the Benedictine monk (Paris, 1720; Venice, 1761); they were reprinted in Migne, *Patrol. Græca*, xxxiii, and by G. C. Reischl and J. Rupp (2 vols., Munich, 1848-60, Eng. trans. by E. H. Gifford in *The Nicene and Post-Nicene Fathers*, 2d series, vol. vii, New York, 1894). Consult Delacroix, *Saint Cyrille de Jérusalem, sa vie et ses œuvres* (Paris, 1866), and Mader, *Der heiligen Cyrillus* (Einsiedeln, 1901).

CYRIL (827-869) and **METHODIUS** (c.825-885). The apostles of the Slavs in the ninth century. They were brothers and sprang from a family of high rank in the half-Slavic, half-Greek town of Thessalonica. Having been ordained priest, Cyril (whose name was properly Constantine) became secretary to the Patriarch of Constantinople and later prominently connected with the anti-Jewish polemics. The latter interest it was which induced him to go forth, during the reign of the Byzantine Emperor Michael III, to evangelize the Khasars, dwelling by the Caspian Sea under a Jewish king who allowed Jews, Mohammedans, and Christians to live peacefully together. His labors were very successful, the Khan himself being among the converts. At this time Methodius, his elder brother, was abbot of a famous monastery in Constantinople. The Duke of Moravia, Rostislav, having established an independent Slavic kingdom and driven out the German priests, applied to Constantinople for Christian teaching. The Patriarch sent him Cyril and Methodius (864). Cyril was long thought to have invented the Slavic alphabet (see **CYRILLIC ALPHABET**), a modification of the Greek, and the brothers, assisted by a number of their pupils, completed their translation of the Holy Scriptures, which is in use to the present day among all Slavic Greek Catholic Christians (Russians, Bulgarians, and Serbs). Feeling the necessity of linking the Moravian church to the power of Rome, the brothers, after three and one-half years of work, went to Rome. There they were cordially received and were ordained. The younger of the two brothers died Feb. 14, 869, as monk in a monastery at Constantinople, where he had taken the name of Cyril. Methodius continued the work among the Slavs, but in Pannonia, not in Moravia. In 870 the Pope made him a bishop and in 873 archbishop. Supported by the Pope, he long kept up a constant fight with the German emissaries. He died at Wehlerad, April 6, 885. Consult: Ginzel, *Geschichte der Slavenapostel Cyril und Methodius* (2d ed., Vienna, 1861), Dümmler and Miklosich, *Die Legende vom heiligen Cyrillus* (Vienna, 1870); Goetz, *Geschichte der Slavenapostel Constantinus (Cyrillus) und Methodius* (Gotha, 1897); also *Vita Sancti Methodii*, ed. by Miklosich (Vienna, 1870); Maclear, *Conversion of the Slavs* (London, 1879). The *Apologia Morali* ascribed to Cyril was published by Corter (Vienna, 1630).

CYRIL/IA (named in honor of Domenico Cirillo or Cyrillo, an Italian physician). An evergreen tree or shrub, of which there is but one species, leatherwood (*Cyrilla racemiflora*),

found from the southern United States to Brazil. In the United States it occurs from North Carolina to Texas and is hardy as far north as Philadelphia. It has bright green leaves, and white flowers in racemes. The species is variable, and under cultivation some of the varieties are very ornamental.

CYRILLIC ALPHABET, or **KIRILLITS**, **Kĕ-ril'it-sal**. A method of writing long supposed, wrongly, to have been invented by Cyril, apostle of the Slavs (see **CYRIL** and **METHODIUS**) between 855 and 863. It is based upon the Greek uncials of the ninth century, with the addition of some signs to represent sounds not found in Greek. It originally consisted of 38 characters, to which 10 more were added later. This alphabet is of somewhat more recent origin than the *glagolitic*, or *glagolitsa* (q.v.), which is probably the alphabet invented by Cyril. The oldest-known document written in Cyrillic characters is an inscription of the Bulgarian Tsar Samuel, of 993 A.D. The Old Bulgarian (Old Church Slavonic) manuscripts are mostly written in glagolitic characters, there being only two important Cyrillic manuscripts, the *Coder Suprasliensis*, and the *Gospel of Priest Sabba* (Savvina Kniga). With some modifications, the Cyrillic is the alphabet now used in Russia, Bulgaria, and Servia; it was formerly also used in the writing of Rumanian, although this is not a Slavic language. Consult: Taylor, *The Alphabet*, vol. ii (London, 1899); Karskit, *Ocherk Slavianskoĭ Kirilitskoĭ Paleografi* (Warsaw, 1901), the introductory portion of Leskien, *Grammatik der althallgarischen Sprache* (Heidelberg, 1909), and, passim, the *Archiv für slavische Philologie*.

CYRIL LU'CAR. See **LU'CARIS**, **CYRIL**. **CYR'OPÆDIA** (Lat., from Gk. *Kύρου παιδεία*, *Kyrou paidia*, education of Cyrus), THE. The longest work of Xenophon (q.v.), purporting to give a history of the early life and training of Cyrus the Great, but in reality an historical romance. Its elaborate scheme of government and education are Spartan rather than Persian, and the whole work is to be regarded as the exposition of an ideal government.

CYRTOCERAS, *sēr-tōs'ē-ras* (Neo-Lat., from Gk. *κῦρτος*, *kyrtos*, curved + *κέρας*, *keras*, horn). A genus of curved tetrabranchiate cephalopods, of which fossil species are found in rocks of Devonian age. They have large, laterally compressed, or triangular curved shells, with subtriangular or T-shaped openings. The camera, or chambers, are very short, so that the septa are close together, and the siphuncle is large, ventral, or subventral, and restricted at each septum so that in a longitudinal section of the shell it gives the appearance of a string of elongated beads. The genus *Cyrtoceras* formerly included a great variety of curved shells, most of which have been proved by Hyatt to belong to other genera and even other families from that which includes the type species. Consult: Hyatt, "The Genera of Fossil Cephalopods," *Proceedings Boston Society of Natural History*, vol. xxii (Boston, 1884); Von Zittel and Eastman, *Textbook of Palæontology*, vol. i (London and New York, 1900). See also **CEPHALOPODA**; **ORTHO CERAS**; **NAUTILUS**; **NAUTILOIDEA**. For illustration, see **PLATE OF CEPHALOPODA**.

CYRUS. River in Transcaucasia. See **KUR**. **CYRUS THE GREAT**, or **CYRUS THE ELDER** (c.600-529 B.C.). The founder of the Persian Empire and conqueror of Babylon, whom Isaiah

called the *anointed* of the Lord and his *shepherd* (Isa. xlv. 28; xlv. 1). The name of this monarch appears in Old Persian as *Kūrus*, in the Babylonian inscriptions as *Kuras*, in Hebrew as *Kōres*, and in Greek as *Kūros*, whence Latin *Cyrus*. According to Herodotus, the name signifies *sun*; but there is some possibility, judging from the Neo-Elamitic, that its signification may have been *shepherd*, with which the Isaiah passage might be compared. The lineage of this great King we have on his own authority on a famous cuneiform cylinder discovered some years ago. (Consult Rawlinson, *Journal Asiatic Society*, London, 1880, and Hagen, in Delitzsch and Haupt, *Beiträge zur Assyriologie*, vol. ii, Leipzig, 1894.) This was written in the Babylonian language and is now among the treasures of the British Museum. In this *Cyrus* traces his royal claim through his father, Cambyases, and his grandfather, Cyrus, back to Teispes; the latter was the son of Achæmenes (q.v.), founder of the Achæmenian line. The ancestral home was Anshan, or Anzan, which is believed to have been a city or district of Elam (q.v.). However that may be, there can be no doubt that *Cyrus* was a Persian, and he is rightly so called in the Old Testament.

According to the cuneiform records of Nabonidus (*Nabū-nā'id*), *Cyrus* was a vassal of Astyages (*Īktuvegu*), who is spoken of as King of the Medes, or again of the Scythians. There is good ground for believing that *Cyrus* was directly connected with this ruler by the ties of blood. Herodotus (i, 107 ff.) expressly states that *Cyrus* was the grandson of Astyages, whose daughter Mandane had been married to Cambyases, a Persian noble. The Greek historian has a number of interesting and highly colored legends to narrate regarding the fear of Astyages for the infant as his future vanquisher, with popular stories also regarding the fortunes of the youthful prince and his rapid elevation to power. Whatever value is to be placed on these picturesque accounts, there is no question that *Cyrus's* triumphant career began with his overthrow of Astyages and his final mastery of Media before the year 550 B.C. The conquest of the Median Empire opened the way for further success, and *Cyrus* turned his victorious arms against Cræsus of Lydia, whom he vanquished 546 B.C. Asia Minor was thus brought practically under this ambitious ruler's sway.

The time had now arrived to strike a mighty blow against Babylon. Nabonidus, the King of that ancient capital, seems to have estranged himself from his subjects and to have lost the favor of the priestly class. By preference he lived at Temā, or Tevā, and when the condition of affairs within Babylon itself became such as to call him back, it was too late. The account of the fall of the city we can gather by combining the testimony of the cuneiform records with the biblical narrative and Herodotus. Internal factions seem to have been numerous: the Jews, who were in captivity in the city, apparently played a part. Babylon is stated to have fallen *without fighting* before the victorious hosts of *Cyrus*, and Nabonidus was utterly overthrown. Belshazzar of the Old Testament may have been Bel-shar-usur, the son of Nabonidus, who, according to the inscriptions, offered resistance to the advance of *Cyrus's* forces. The fall of the city itself occurred at the moment of the great Tam-muz festival (July, 539), and it was actually accomplished by *Cyrus's* satrap Gobryas (Gu-

baru or Ugbaru of the inscriptions), who was in command of the advance army. *Cyrus* himself made his triumphal entry into the city in October, 539, and became King of Babylon. The famous cylinder above referred to records the inauguration of his rule. We know in general that his policy towards the conquered people was a most liberal one, and even though it may have fallen somewhat short, perhaps, of the enthusiastic hopes of a prophetic Isaiah, its ultimate influence and effects are undoubted as having contributed towards the restoration of the Jews from captivity. See *BABYLON*.

The ambition of *Cyrus*, growing with advancing years, led finally, it seems, to his own destruction. The vision which Herodotus tells us Astyages beheld in a dream of the figure of the youthful *Cyrus* adorned with wings that overshadowed all Asia seemed now on the eve of fulfillment. The great conqueror's dominions actually extended almost from the Hellespont to the Indus. But disaster was at hand. *Cyrus* engaged in an invading expedition against the Scythian hordes of the north (Herodotus, i, 204; Ammianus Marcellinus, 20, 6, 7, 40). In a battle against their Queen, Tomyris, *Cyrus* is said to have been slain. Ctesias (*Pers.* 6-8), however, states that *Cyrus* fell in battle against the Derbices, a tribe bordering on India. The year of his death was 529-528 B.C., and his age is given as 71 years. His body is said to have received a final resting place at Pasargade. A tomb, now empty, still stands there surmounting a series of rising stone steps. Near by is a huge monolith slab that once bore his name; but this is broken and tumbled down, a monument, like the empty and lonely mausoleum, silently recording the fall of greatness.

In estimating the character of *Cyrus*, after we have considered all the accounts of him, we may judge him to have been not only a man of great personal power, but an ideal king. The Persians called him father (Herodotus, iii, 89, 160): the Jews looked upon him as their liberator, the Greeks admired his qualities as a ruler and legislator (*Æschylus, Pers.* 764-68); and Xenophon chose him as the hero of his famous historic romance, the *Cyropædia*. Taken for all in all, his claim to be entitled *Cyrus the Great*, as history has crowned him, remains unchallenged with time. The best short account of *Cyrus*, with abundant references, is that of Justi, in Geiger and Kuhn, *Grundriss der iranischen Philologie* (Strassburg, 1897). Consult also Duncker, *History of Antiquity*, Eng. trans. (London, 1881). Passing mention may be made of Horner, *Daniel, Darius the Median, Cyrus the Great* (Pittsburgh, 1901); Amiaud, *Cyrus, roi de Perse* (Paris, 1887); and Lessman, *Die Kyrossage in Europa* (Charlottenburg, 1906).

CYRUS THE YOUNGER (?-401 B.C.). The second of the sons of Darius Nothus, or Ochus, and Parysatis, familiarly known through Xenophon's *Anabasis*. When his elder brother, Artaxerxes Mnemon (q.v.), succeeded to the throne (404 B.C.), *Cyrus* conspired to deprive him of his crown and his life. The plot, however, being discovered, he was at first sentenced to death, but afterward pardoned, through his mother's intervention, and was even restored to his dignity of satrap of Asia Minor. Here he employed himself in making arrangements for war against his brother, although he concealed

his purposes to the very last. In the spring of 401 B.C. he left Sardis at the head of 100,000 Asiatics and 13,000 Greek mercenaries, under pretense of chastising the robbers of Pisidia. These numbers given by Xenophon are greatly exaggerated, for the two armies combined probably failed to reach 100,000. Artaxerxes, being warned of Cyrus's perfidy, made preparations to oppose him, and the two armies encountered each other, in October, 401 B.C., in the Plains of Cunaxa, between 60 and 70 miles from Babylon. Cyrus was defeated and slain, although the Greeks fought with the greatest courage, and even routed that portion of Artaxerxes' troops immediately opposed to them. The fortunes of the Greeks, on their retreat through the highlands of Kurdistan and Armenia in severe winter weather, are recorded by Xenophon in his *Anabasis* (q.v.). That historian represents Cyrus the Younger as endowed with every amiable quality.

CYST (from Gk. *kýstis*, *kystis*, bladder). A tumor containing one or more cavities, the contents of which are of a fluid or semifluid consistency. Cysts arise from distention of pre-existing spaces (retention or exudation cysts); or in spaces of new formation, as blood cysts; or they may be of congenital origin or parasitic. The cyst wall is formed of connective and fibrous tissue, rarely of muscular fibres, and the inner surface of the cavity is lined with epithelium. Cysts are classified according to their mode of development. Some are found in glands and are due to an excess of the normal cell secretion; others are caused by obstruction of the ducts through which the secretion naturally escapes. One class, known as dermoid cysts, are due to faulty embryonic development, and these at times contain hair, nails, or teeth. Occasionally solid tumors undergo cystic degeneration. Hydatid cysts are of parasitic origin and occur most frequently in the liver. Besides these there are numerous other varieties depending upon the tissues in which they grow. Cysts vary from minute retention cysts on the face to the enormous tumors of the ovary, weighing over 100 pounds. Surgical interference is frequently required. See OVARY; HYDATID. WEN.

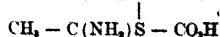
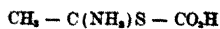
CYSTEIN, sis'té-in, or α -amino-thiolactic acid, $\text{CH}_3\text{C}(\text{NH}_2)(\text{SH})\text{CO}_2\text{H}$. A substance obtained by Baumann, by reducing cystin (q.v.) with nascent hydrogen from tin and hydrochloric acid. It is a white crystalline powder, soluble in water and in acetic acid as well as in the strong mineral acids. Its aqueous solution is readily oxidized by the air, with re-formation of cystin.

CYSTICER/CUS. See TAPEWORM.

CYSTID/EA. See CYSTOIDEA.

CYSTIN (from Gk. *kýstis*, *kystis*, bladder), $\text{C}_4\text{H}_{12}\text{N}_4\text{S}_2\text{O}_4$. An organic acid (amido-sulpholactic acid), allied to lactic acid. It occurs normally in urine in very small quantities, and it is the principal constituent of the urinary calculus known as cystic calculus, from which it may be obtained by dissolving in ammonia and allowing the solution to evaporate, the cystin separating out in the form of characteristic colorless hexagonal or orthorhombic crystals, which are insoluble in water, alcohol, or ether. The ammoniacal or hydrochloric-acid solution of cystin turns the plane of polarized light strongly to the left. The internal administration of sulphur appears to be the only remedy that produces an appreciable diminution of cystin in

pathological cases. The constitutional formula of cystin is



CYSTITIS (Neo-Lat., from Gk. *kýstis*, *kystis*, bladder). Inflammation of the urinary bladder. Among the causes of cystitis may be mentioned injuries, exposure to cold, injection of irritating medicaments in treating the urethra, insertion of a dirty catheter when drawing off the urine, retention of fermenting urine, extension of inflammation from other adjacent tissues, or the presence of a calculus (q.v.). The inflammation is accompanied by chills, fever, some nausea, pain in the bladder, and a continual desire to urinate. The urine is generally cloudy, from mucus and pus, or bloody. In treating cystitis, heat should be applied to the abdomen, or the patient should take a hot sitz bath; he should take large quantities of alkaline drinks, and rest in bed. In many cases it is necessary to wash out the bladder, and a variety of drugs are used, according to the exact nature of the symptoms.

CYSTOCARP (Gk. *kýstis*, *kystis*, bladder + *karpos*, *karpos*, fruit). A complex form of fructification developed in the red algae as the result of the sexual act. See RHODOPHYCEÆ; ALGÆ.

CYSTOIDEA (Neo-Lat. nom. pl., from Gk. *kýstis*, *kystis*, bladder + *eidos*, *eidos*, form). A class of extinct echinoderms of the subphylum *Pelmatozoa* (q.v.), allied to the crinoids and blastoids, but differing from these chiefly in the irregular arrangement of the plates of the calyx and the imperfect development of their arms. In general appearance the Cystoidea resemble the crinoids, with the remains of which they are often found associated in the Ordovician and Silurian strata. The cystoid body was inclosed in a case or "calyx" of variable form, spherical, cylindrical, hemispherical, or discoid, which is made up of polygonal calcareous plates without regular arrangement. The calyx plates seem to have been, in many early genera, loosely united to each other, so that they became easily dissociated after death of the animal. This explains the rarity of perfect individuals in the Ordovician rocks, where the fragments are often exceedingly abundant. Another characteristic is the presence of pores that perforate the plates and that are arranged in rhombic series. These pores are supposed to have been connected with the respiratory apparatus. The number of plates in the calyx is very variable, from 10 or 12 to over 100, and as a rule those forms with the largest number of plates show the greatest irregularity in their arrangement. In some of the forms, with less number of plates, these are arranged in regular transverse rows, and the calyx then approaches more nearly the aspect of the simpler forms of crinoids.

The arms are absent in many genera of cystoids, and when present are seldom found attached to the calyx. They are never pinnulated like those of the crinoids, though they are composed in a similar manner, and are often supplied with grooves. In those cystoids without free arms there is generally found on the ventral surface of the calyx a system of ambulacral furrows that radiate irregularly from the mouth opening. These furrows, representing the arms, are bordered by rows of small plates that often

bear pinnules of delicate construction, as seen in *Callo cystites*, *Glyptosphaerites*, and *Agelacrinus*. The more primitive cystoids have neither arms nor ambulacral furrows. The openings of the calyx are four in number. The mouth is central or subcentral on the upper or ventral surface; the anal opening is eccentric, and is generally closed by a pyramid of small, triangular plates; a third opening, often present near the anal opening and generally closed by triangular plates, is considered to be the genital orifice; and a fourth small, slitlike aperture, present in only a few genera, is of problematic nature. The calyx of the cystoid is usually elevated on a stem which often resembles that of the crinoid in being composed of a single series of plates pierced by a central canal. In some genera (as *Dendrocystites*) the stem is made up of plates arranged in transverse rows, and the central cavity is then much enlarged and continuous with the general cavity of the calyx. In *Echinospherites* the stem is reduced to a tubercle on the dorsal surface, and the animal seems to have been a free living form. The discoid genera *Agelacrinus* and its allies are sessile, and are attached either by a pedestal or by cementation of the dorsal surface of the calyx to foreign objects, generally the shells of mollusks.

Classification of the Cystoidea is a matter of difficulty, not alone because of the general imperfection of the material, but also on account of the great diversity of structure seen within the class, which contains a number of synthetic or ancestral types that seem to have given rise to all the other more specialized groups of the Echinodermata. Through assumption of a more regular arrangement of the plates and the development of the arms, with consequent rearrangement of the ventral surface, as in *Cryptocrinus*, *Porocrinus*, and *Caryocrinus*, they gave rise to the Crinoidea. Reduction of the plates and enlargement of the ambulacral grooves, with the assumption of the pentamerous gemmiform shape, as in *Asteroblastus*, leads to the Blastoidea. *Agelacrinus* is suggestive of the starfish (Asteroidea) and brittle stars (Ophiuroidea), and finally the Echinoidea and Holothuroidea may be imagined to have been derived from the more spherical forms of armless cystoids, the echinoids presenting a series of progressive evolution, the holothurians a regressive series.

Range. The cystoidea is the oldest-known class of echinoderms, their isolated plates, rarely united to give a clue to the form of the animal, known under the names of *Eocystites*, *Protocystites*, etc., from the Cambrian rocks, are the earliest representatives. The class enjoyed two periods of expansion. First, in the early Ordovician time they flourished in hosts in some regions, their remains forming the larger part of certain limestones, such as the lower Chazy limestones of Lake Champlain. Other limestones, of Beekmantown and Trenton age, in the St. Lawrence and Champlain valleys, and beds of equivalent age in the Baltic provinces of Europe, contain abundant cystoid remains. The second expansion of the class occurred during the Silurian time, when these creatures lived in abundance in some portions of the seas of northern and middle Europe and eastern North America. In all about 250 species are known, and of this number only about 15 have been found in rocks above the Silurian system. The group entirely disappeared with the close of Paleozoic time.

Bibliography. Consult: Forbes, "On the Cystoidea of the Silurian Rocks of the British Islands," *Memoirs of the Geological Survey of Great Britain*, vol. ii, part ii (London, 1848); Billings, "On the Cystoidea of the Lower Silurian Rocks of Canada," *Figures and Descriptions of Canadian Organic Remains, Decade III* (Montreal, 1858); Hall, "Descriptions of Some New Fossils from the Niagara Group," *Twentieth Annual Report of the New York State Cabinet of Natural History* (Albany, 1867); Barrande, "Cystidées," *Système Silurien du Centre de la Bohême*, vol. vii (Prague and Paris, 1887); Bather, "The Cystoidea," in *Lankester's Treatise on Zoology*, part iii, chap. ix (London, 1900); Von Zittel and Eastman, *Textbook of Paleontology*, vol. i (London and New York, 1900); Jackel, *Stammesgeschichte der Paläozoischen* (Berlin, 1899); Schuchert, "On Siluric and Devonian Cystoidea and Camarocrinus," *Smithsonian Miscellaneous Collections*, vol. xlvii, part ii (Washington, 1904). See CRINOIDEA; ECHINODERMATA, and articles on the other classes of echinoderms.

CYSTOLITHS (Gk. *kýstis*, *kystis*, bladder + *lithos*, *lithos*, stone). Masses of cellulose and calcium carbonate (the chief constituent of limestones), found in the cells of plants belonging to the families Urticaceae and Acanthaceae. They are most common in the epidermis of both leaves and stems, but are found also in the cortex and pith. A single cystolith occupies a cell, nearly filling it, though the cell is enlarged. Cystoliths are irregularly warty or nodulated like a compact bunch of grapes. Each is attached to the wall of the cell in which it lies by a short stalk of cellulose. In reality the cystolith is an outgrowth from the cell wall, at first peg-shaped, later club-shaped, and finally warty. Its foundation substance is cellulose (the same as that of the wall), which is impregnated with a large quantity of calcium carbonate in the form of very fine granules, thus forming a stony mass. The stalk often contains silica. The carbonate is to be regarded as a waste product from the chemical processes occurring in the plant and is of no further direct use. It can readily be dissolved out by weak acids, the process of solution being accompanied by effervescence and the evolution of carbonic-acid gas (carbon dioxide). Good examples of cystoliths are to be found in the leaves of nettles (*Urtica*) and of the fig (*Ficus*).

CYSTOSCOPE. An instrument for examining the interior of the bladder, and consisting of a hollow tube, electrically lighted, and furnished with miniature lenses which reflect the image to the eyepiece outside of the body. Several types of the instrument are in use, some being used merely for examination and others devised to carry instruments for operating, making applications to the interior of the bladder, or even catheterizing the ureters and pelvis of the kidneys. Previous to using the cystoscope the bladder is partly filled with warm, clear, sterile fluid, in order to keep its walls apart and prevent burning from the lights.

CYTASE (from Gk. *kýros*, *kýtos*, cavity, cell). A name now commonly applied to an enzyme or perhaps a number of different enzymes that hydrolyze hemicellulose (q.v.), giving as final products mannose and galactose. It is of functional importance in digesting the reserve food in the seeds of *Iris*, *Phenix*, *Lupinus*, and others. The enzymes that hydrolyze cellulose,

as well as those that digest wood vessels, are sometimes included under this general term.

CYTHERA. See CERIGO.

CYTHEREA. See VENUS.

CYTHERIS. A well-known Roman courtesan, the mistress of Marcus Antonius and later of Gallus, the elegiac poet. She is referred to under the name of Lycoris in Vergil's tenth Eclogue.

CYTISUS (Lat., shrubby kind of clover). A genus of plants of the family Leguminosae, of which some of the species, having long twiggy branches, are popularly called "broom," others are called "laburnum," while others still are generally known by the name "cytissus." The species are numerous—small trees or shrubs, with leaves of three leaflets, and yellow, white, or purple flowers, natives chiefly of the warmer temperate parts of the Old World. Many of them are very beautiful, and some are among the esteemed ornaments of our shrubberies, others of our greenhouses. Several species of *Cytissus* have been recommended as forage plants, stock readily browsing upon their green twigs. *Cytissus scoparius*, the Scotch broom, is a form so valued, while *Cytissus proliferus alba*, the tagasaste of the Canary Islands, is highly commended. Trials in California have not substantiated the rather extravagant claims made for it.

Cytissus adami, an interesting shrub that bears yellow and purple flowers on different branches, is a so-called graft hybrid between *Cytissus purpureus* and *Laburnum vulgare*.

CYTOLOGY (Gk. *κύτος*, *kutos*, cell + *λογία*, *logia*, account, from *λέγειν*, *legen*, to say). A branch of the sciences of botany and zoology. As histology is largely concerned with tissues, so cytology deals principally with cells, the elements which make up the tissues. Although it is only recently that botanists have begun to make a specialty of this subject, the work has been prosecuted with great vigor, and the subject is beginning to assume some definiteness. The chief problems at present are the structure and activities of protoplasm, the life history of plastids, the structure and function of the nucleus, the reduction of chromosomes, the origin and development of the achromatic figure, the centrosome, the cell wall, the development of the sex cells, fertilization and the formation of the embryo, and, most difficult of all, the problem of heredity.

Botanical Cytology. As yet little is known regarding the structure of protoplasm in plants, but the investigations which have been made favor the assumption that its structure is identical with that in animals. Much more attention has been paid to the nucleus. Even the small nuclei of many of the algae and fungi have been studied, and the details of their structure and mode of division quite accurately determined. No organ of the cell has been so assiduously investigated as the chromosome, but nevertheless most of its important problems remain to be solved. The fact that the number of chromosomes is constant for a given species, and the phenomena of fertilization, indicate that the chromosome is a permanent organ of the cell, but its life history from one cell generation to another has not yet been traced, the identity of the several chromosomes being lost in the resting nucleus. In vegetative cells the splitting of the chromosomes during nuclear division is longitudinal. During the process of forming

four spores from a mother cell the number of chromosomes is reduced by one-half, and some claim that during the reduction there is a transverse splitting in the sense of the Weissmann school; most observers, however, now believe that the reduction in the number is brought about by a pairing and subsequent separation of whole chromosomes without any splitting. Both observations and theories are still very conflicting. The origin and development of the achromatic figure have received large attention, especially since the beginning of the present century. It was formerly supposed that the achromatic figure always rose under the influence of the centrosomes, but recent observations have proved that no centrosome exists at all in the angiosperms, and it is doubtful whether such an organ exists in the gymnosperms and pteridophytes, unless the "blepharoplast," a centrosome-like body which develops the cilia of the male cell, be interpreted as a genuine centrosome. In the other groups, except the mosses, which have received scant attention, an undoubted centrosome has been demonstrated.

The development of the sex cells, from the earliest appearance of the archesporium up to the time of fertilization, has been repeatedly studied in various plants, but the work has been morphological rather than cytological, little attention having been paid to the details of cell contents except in case of mother cells. In the study of cells more immediately concerned in fertilization, the cells of the sporogenous tissue have been slighted. Some of the most important cytological work deals with the problems of fertilization. The question of sexuality in the Ascomycetes has received a definite answer in the case of several forms by the demonstration of an actual process of fertilization. The fusion of the sex nuclei in ferns has been described with more or less completeness. In the gymnosperms, where the sex cells are extremely large, the process of fertilization has been more satisfactorily investigated, and it has been found that both the nucleus and the cytoplasm of the male cell enter the egg, but that the nucleus slips out from its cytoplasmic mantle before it reaches the nucleus of the egg. The male nucleus with its nuclear membrane still intact is then received bodily into the much larger egg nucleus. The chromatin of the two nuclei in the form of two distinct spires has been observed, and in some species the chromatins of the two nuclei may remain distinct during the later stages of fertilization, and possibly during the cell divisions which follow. In the angiosperms, while the union of the sex nuclei has been repeatedly observed, the behavior of the chromatin has received little attention, but in a few carefully studied species the chromatin of the sex nuclei remains distinct during fertilization. Two male cells are discharged from the pollen tube into the embryo sac: the nucleus of one of these cells unites with the nucleus of the egg and the first cell of the sporophyte is formed. The second male cell often unites with the definitive nucleus of the embryo sac formed by the fusion of the two polar nuclei, so that there is a "double fertilization." Double fertilization has been observed in monocotyledons and dicotyledons, and it is the usual method. While it is becoming conceded that the problems of heredity must be ultimately problems of the cell, nearly all the work of botanists along this line

must be classed as morphological. See CELL (in plants); EMBRYOLOGY; SEX.

In medicine, cytology is the investigation of the cellular elements of exudates or other body fluids, particularly those not containing pus. In order to separate the cells, the fluid to be studied is shaken up in a sterile container having within it small glass beads in order to prevent clotting, or to disintegrate a clot if one is already present. The fluid thus separated is centrifuged for several minutes and the residue examined under the microscope after being stained. The method (termed "cyto-diagnosis") is useful in differentiating the various types of pleurisy; an undue proportion of lymphocytes and endothelial cells, e.g., indicates tuberculous or typhoid pleurisy, while in malignant pleurisy tumor cells may be found in the precipitate. In the same way the different types of peritonitis may be distinguished. Tuberculous peritonitis is characterized by lymphocytosis and the presence of polynuclear white blood corpuscles, whereas the fluid from ovarian cysts and that found in ascites contain only a few endothelial cells. Tuberculous meningitis is characterized by a lymphocytosis of the cerebrospinal fluid, while epidemic meningitis, due either to the pneumococcus or the meningococcus, will contain polynuclear white blood corpuscles.

CYTOPLASM. See CELL (in plants).

CYZICUS (Lat., from Gk. *Kýzos*, *Kyzikos*). A colony of Miletus in the Propontis, founded about 700 B.C., on the south shore of the island of Arctonnesus, which has now become a peninsula (Map: Greece, Ancient, E 1). In ancient times the island was connected with the mainland by bridges. Its situation and two good harbors made it early a prosperous town, while its strong position enabled it to maintain its freedom. It was favored by the Romans, and after sustaining a long siege by Mithridates it was made a free city, a privilege which it lost under Tiberius. By 1100 A.D. the city had been destroyed by a series of earthquakes. The site is still covered with extensive ruins, which include walls, an amphitheatre, and the substructures of a splendid temple of Hadrian. It lies to the southeast of the island of Marmora, and about 70 miles southwest of Constantinople. Consult Hasluck, *Cyzicus* (Cambridge, 1913).

CZACKI, cháts'ká. **TADEUSZ**, COUNT (1765-1813). A Polish writer and statesman. He was born at Poryek, Volhynia. At 20 he obtained an office in the Superior Court of Justice at Warsaw, and in 1788 was appointed to the Treasury Commission of the Diet. His interest in the economic welfare of his country impelled him to travel through Poland and to produce a map of its river system. The development of navigation on the Dniester engaged his particular attention. When his property was confiscated at the second partition of Poland, he became a professor at Cracow; but Paul I, to whose coronation he went as deputy from Volhynia, restored what he had lost. After this Czacki's whole life was devoted to the education of his countrymen. His plans for disseminating instruction in the Polish provinces of Russia, the people of which were extremely ignorant, met with the approval of Alexander I, and in 1803 he was made inspector of the schools in the governments of Volhynia, Podolia, and Kiev. He gave out of his various resources, about 500,000 thalers to various schools. He also

donated a library containing some 4000 manuscripts, 12,000 works in Polish, and 80,000 miscellaneous works. The Gymnasium of Kremenetz, which he founded, was the main object of his care. For a generation this institution was the spiritual centre of Poland, furnishing the champions of national self-consciousness against the deadening influence of French pseudoclassicism. Accused of stirring up political discontent among his countrymen, Czacki went to St. Petersburg in 1807 and so ably defended himself that Alexander I appointed him deputy of Prince Czartoryski, who was curator of public instruction in the Polish section of Russia. Czacki died at Dubno, and his collections passed into the hands of Czartoryski. His miscellaneous works were published in 3 vols. (Posen, 1843). They are in the main historical and archaeological. His most valuable work is a treatise *On Lithuanian and Polish Laws* (2 vols., Warsaw, 1800; 3d ed., Cracow, 1861).

CZAJKOWSKI, cht-kóf'ské, MICHAŁ (1808-86). A Polish novelist. He was born near Berditchev in the Ukraine, where, in 1831, he participated in the insurrection against Russia and was compelled to flee to Paris. In 1840 a number of Polish émigrés sent him on a secret mission to Turkey, and in 1851 he embraced Mohammedanism. As Mohammed Sadik, he commanded a body of troops called the Cossacks of the Sultan. He fought with distinction against the Russians in 1853-54. Amnestied by Russia in 1873, he removed to Kiev. In consequence of an accusation of treason subsequently made against him, he committed suicide. Czajkowski obtained wide celebrity through his stories of Cossack life, several of which have become extremely popular and have been translated into German, French, and English.

CZAR, zar (Russ. *tsar*, Bohem. *tsar*, OChurch Slav. *tsársari*, *tsársarū*, through OHG. *keisar*, from Lat. *Cæsar*). The alternative title of the Russian Emperor, written also Tzar. During the Middle Ages the Emperor of the East and the Mongol Khans appear under the title of Czars in Russian contemporary literature, while the rulers of the various Russian provinces are called grand dukes till the sixteenth century. In 1547, however, Ivan the Terrible caused himself to be solemnly crowned 'Czar of Moscow. Henceforth the Russian monarchs called themselves by this title until the conquest of Little Russia and Smolensk caused them to assume that of Czar of All the Russias. The word then became practically synonymous with Emperor. Yet in 1724 Peter I thought fit to assume this latter title in addition, and, as the Russian language had no term corresponding to it, the Latin word *Imperator* was introduced, while the Empress was termed *Imperatrissa*. At first several European powers refused to sanction the assumption of Imperial dignity by the Russian Czar, but ultimately they consented to do so. The wife of the Czar was named *Czaritsa* (Czarina); his son, *Czarevitch*; his daughter, *Czarevna*. After the death of Alexis, Peter I's son, these titles were abolished, the Imperial princes being called grand dukes and the Imperial princesses grand duchesses. In 1799 the Emperor Paul I introduced the title of *Cesarevitch* (not *Czarevitch*) for his second son, the Grand Duke Constantine. The heir apparent and his wife are still called *Cesarevitch* and *Cesarevna*. Among the Russians

themselves the Emperor is more frequently called Gosudar, i.e., lord, than Czar. See RUSSIA.

CZARDAS. See CSÁRDÁS.

CZARNIECKI, or CZARNECKI, *chärn-
yět'sk'é, STEFAN* (1599-1665). A Polish general. He was distinguished by his bravery and brilliant generalship in the war against Charles X of Sweden (1655-60), upon the conclusion of which he was hailed as the liberator of his country, which, simultaneously with the great onslaught of the Scandinavians, had been assailed by the Russians and Transylvanians. He also won laurels in the war against the Cossacks (1660-61), successively defeating them in two great battles. He had attained the highest rank in the Polish army when, attended by only a few horsemen, he undertook an expedition to the Crimea, in order to secure an alliance with the Tatars. In consequence of the fatigue and exposure of this journey he died at a village in Volhynia. He has been styled the Polish Du Guesclin.

CZARTORYSKI, *chär'to-ris'k'é, ADAM JERZY* (GEORGE), PRINCE (1770-1861). A Polish patriot, born at Warsaw, Jan. 14, 1770. He was the son of Prince Adam Casimir Czartoryski, the head of an ancient Polish house. After studying in Edinburgh and London, he returned to his native country and took part against Russia in the war following the second partition of Poland, in 1793. On the defeat of the Poles Czartoryski was taken to St. Petersburg as a hostage, and here he exhibited so much ability and prudence as to gain the friendship of the Grand Duke Alexander and the confidence of Emperor Paul, who made him Ambassador to Sardinia. When Alexander ascended the throne (1801), he appointed Czartoryski assistant to the Minister of Foreign Affairs; and he took an active part in official life until after the Peace of Tilsit (1807). As curator of the University of Vilna he exerted all his influence to keep alive a spirit of nationality among the Poles, and when some of the students were arrested on a charge of sedition and sent to Siberia, Czartoryski resigned his office. His successor reported to the Emperor that the amalgamation of Russia and Lithuania had been delayed a century by Czartoryski's activity as head of the university. When the revolution of 1830 broke out, he threw in his lot with his countrymen. He was elected President of the provisional government, and in this capacity summoned a national diet, which met in January, 1831, and declared the Polish throne vacant, and elected Czartoryski head of the national government. He immediately devoted half of his large estates to the public service and adopted energetic measures to meet the Russian invasion. The Poles were soon crushed by superior numbers, and Czartoryski—specially excluded from the general amnesty, and his estates in Poland confiscated—escaped to Paris, where he afterward resided, the friend of his poor expatriated countrymen, and the centre of their hopes of a revived nationality. In 1848 he liberated all the serfs on his Galician estates, and during the Crimean War he ineffectually endeavored to induce the Allies to identify the cause of Poland with that of Turkey. He refused an amnesty offered to him by Alexander II, and died in Paris, July 16, 1861. Consult his *Mémoires et correspondance avec l'empereur Alexandre Ier* (Paris, 1887; Eng. trans., Sielgerd, London, 1888); Morfill, *Story of Poland*,

in "Stories of the Nations Series" (London, 1893); Zaleski, *Life of Adam Czartoryski* (Pol.) (Paris, 1881). See POLAND.

CZAR UND ZIMMERMANN (Ger., Czar and Carpenter). An opera by Lortzing (q.v.), first produced in Leipzig, Dec. 22, 1837; in the United States in 1855 (New York).

CZASLAU, *chäs'lau, or CASLAU, Bohem.* *pron. chäs'läv.* A town of Bohemia, about 40 miles east-southeast of Prague (Map: Austria, D 2). The church of St. Peter and St. Paul was the place of burial of the blind Hussite leader Ziska, a fine statue of whom adorns one of the public squares. The town's manufactures include beet sugar, alcohol, pressed yeast, and beer. Between Czaslau and the neighboring village of Chotusitz the Prussians under Frederick the Great gained a decisive victory over the Austrians under Charles of Lorraine, May 17, 1742. Pop., 1890, 8145. 1900, 9105; 1910, 9122; mostly Czechs.

CZECH (*chěk*), or **BOHEMIAN, LANGUAGE.** The Czech language, like the Polish, Kashubian, and Sorbian, belongs to the north-western group of the Slavic languages. The number of persons speaking Czech, exclusive of the Slovaks, is over 7,100,000. These are distributed as follows: in Austria, about 6,500,000; in Germany, about 125,000; in Russia, about 65,000; and in America, about 500,000. The Czechs occupy the quadrangle bounded by the Bohemian Forest, the Erzgebirge, the Sudetic Mountains, and the Little Carpathians. They are thus surrounded on three sides by Germans, and only on the eastern side do the Czechs come in contact with Slavs, in Silesia with the Poles, and in southeastern Moravia and Hungary with the Slovaks, their nearest kindred, with whom the Czechs are usually grouped into the Czecho-Slovakian division. Within the quadrangle the Czechs are interspersed with Germans, against whom they have maintained a continuous struggle. (See CZECH LITERATURE.) Literary Czech is most nearly related to the dialect of the Prague District; but, taken as a whole, the Czech language presents a great variety of well-defined dialects.

The first mention of the existence of Czech dialects is found in Jan Blahoslav's *Grammar* (1571), published by Jireček in 1857. Just as Roman Catholicism displaced the earlier Greek Orthodox religion, so the Roman alphabet superseded the earliest Slavic characters. The Latin alphabet was insufficient to reproduce all the native sounds, and diacritical letters were introduced. Thus, *č* = Eng. *ch*, *š* = Eng. *zh* (as in pleasure), *ž* = *sh*, while the acute accent is used to denote long vowels. Among the phonetic characteristics of the language may be noted: 1. The disappearance of the old Slavic sounds, *ū*, *ī*, and their transition into *e*: Old Church Slavic *snūnū*, sleep, *dīnī*, day, *līvū*, lion, *līvā* (id., gen. sing.) = Czech *sen*, *den*, *lev*, *lva*. 2. The substitution of open nasals *u*, *ú* and *a*, *ě*, *e* for the old Slavic nasal vowels *ā* and *ē* *muka*, torture, *nesu*, I carry = Old Church Slavic *māka*, *neā*; *patero*, five, *deset*, older *desēt*, ten = Old Church Slavic *pētero*, *desētī*. 3. The so-called transvocalization, whereby *a* becomes *ē* (*e*), *ā*, *ie* (*ē*, *i*): *zeme*, land, *foi zemā*, *dušē*, soul, for **dušā*, while *u*, *ú* = *tu*, *tú*, become *ī*, *ī*: *duši* for **duku* (acc. sing., cf. Russian *dushu*), *duši* for *duku* (abl. sing., cf. Russian *dushoyu*), *lid* for **lud*, people (Russian *lyudi*). 4. The obliteration of distinction be-

tween *y* (= Eng. *i*) and *i* (Eng. *e*) in pronunciation: *býk*, bull, *mýš*, mouse, *sýr*, cheese, are pronounced as if spelled *bik*, *miš*, *sir*; *byl*, I was, and *bil*, I beat, are pronounced precisely alike. 5. The syllabic or vocalic *r*, *l*, *m*, *n*: *zrno*, grain, *srdec*, heart, *vlna*, wave, wool, *sliny*, strong, correspond to Russian *zerno*, *serditsc*, *volna*, *silny*; *Rožmberk*, *Ličmburk*, represent German Rosenberg, Luxemburg. This peculiarity is common also to the Slovakian and Serbo-Horvatan (Serbo-Croat). 6. Long and short vowels: short, *a*, *e*, *i*, *o*, *u*, *y*; long, *á*, *é*, *í*, *ó*, *ú*, *ý*. 7. The primary accent is expiratory or stressed and is always on the first syllable of the word, as in Slovakian, Serbo-Lusatian, and South Kashubian. This accent has been proved to be an historical development of the primitive Slavic free accent. See SLAVIC LANGUAGES.

The quantitative system of versification based on the Latin has been almost entirely superseded of late by the tonic system, better suited to the spirit of Slavic languages. Among the inflectional peculiarities of the language the following are most noteworthy. In the declension of nouns—loss of dual; confusion of various stems: confusion of case endings; change of quality and quantity of the root vowels. In conjugation it comes very close to the primitive Slavic, retaining both the infinitive and the supine. All past tenses are periphrastic, and the forms of the future are either periphrastic—in verbs of incomplete or imperfective action—or are represented by the present in verbs of completed or perfective action.

From the point of view of euphony, the Czech language stands lower than the Russian or Polish, although superior to the latter in some particulars, as in the comparative rarity of sibilants and the absence of nasal vowels.

Slovakian. Along with the Czech language must be mentioned the Slovakian language, spoken by some 3,112,000 persons—about 2,610,000 in Austria-Hungary, 500,000 in America, and 2000 elsewhere. Its literature is only a century old, and its independent development was due entirely to the great wave of national reawakening that swept over Europe at the end of the eighteenth and the beginning of the nineteenth centuries. The movement, communicated to the Czech language, spread to the kindred Slovakian. In spite of the serious opposition on the part of such prominent Bohemians as Havlíček, Šafařík, and Kollar—the last himself a Slovak—a Slovakian literature was established. The pioneer of the movement was Antonín Bernolák (1762–1813), whose *Disertatio Philologica-Critica de Literis Sclavorum, Grammatica Sclavica* (Pressburg, 1790) and *Lexicon Sclavicum Bohemico-Latino-Germanico-Hungaricum* (6 vols., Buda, 1825–27) supplied the foundation for Slovak literature. The other great names are: the poet Jan Holý (1785–1849), who wrote odes and epics in classical style, Ljudevit Štur (1815–56), Josef Hurban, and Michael Hodz, who brought the language to its high standard of literary perfection. Among the more recent writers the following deserve especial mention: the famous Martin Hattala, one of the foremost of Slavic linguists; Svoťaz Hurban Vajanský, son of Josef Hurban; the lyric poet Otař Hvizdoslav, and the novelist Kukučín, a powerful portrayal of popular life and manners. The language, in the works of these writers, though closely kindred to the Czech, exhibits many well-defined peculiarities

which justify its classification as a separate branch. There are numerous works that are not found in the Czech language, and many features bring it nearer to the Russian, Polish, and Servian than to the Czech. Ethnographically considered, the Slovaks are yielding before the march of the stronger and politically dominant Hungarian nationality; but Slovakian literature has received too strong an impetus at the outset to allow of any doubt as to its future development.

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CZECH, or BOHEMIAN, LITERATURE. Among the Slavic literatures the Czech is inferior to the Russian or the Polish, although chronologically it precedes them both.

First Period (to 1410).—The earliest literature of the Czech language came into existence with the introduction of Christianity in Bohemia, in 865, by Cyril and Methodius, the apostles of the Slavs. The earliest extant monument is the Kyrie Eleison *Hospodine pomiluj ny* ('Lord, have mercy upon us'). Greek Christianity and the Cyrillic alphabet (q v), however, gave way to Latin Catholicism and Roman script. The famous Grünberg manuscript (eighth or ninth century), the *Judgment of Libusha*, and the Koniginhof manuscript (thirteenth or fourteenth century), discovered by Hanka in 1817, are the only remains in the native tongue which belong to this period, and even their authenticity is somewhat doubtful. The influence of the Teutonic knights was growing rapidly among the natives, with the result that up to the fourteenth century Latin literature completely displaced works in the vernacular. At the end of the thirteenth century a Czech translation of the Latin *Alexandreis* of Gualterus de Insulis (Philip Gautier de Châtillon) was made, and to the early years of the following century belong Czech versions of two episodes from the Arthurian legend.—*Tristram*, according to Eilhart of Oberg and Gottfried of Strassburg, and *Tausaria* and *Floribella*, after Fleier. Original works in Czech are the famous *Rhymed Chronicle of Bohemia*, by Dalimil, of 1314, and the romantic story *Tkadleček* (The Weaver), written in strikingly beautiful prose

about the end of the fourteenth century. Other works that contributed to the development of the literature were translations of the travels of Marco Polo and Sir John Mandeville. The original writers of the period are: Thomas Stitný (1325-1410), one of the first alumni of the University of Prague (founded in 1348); Andrew of Duba; and the poet Flaska. Stitný exercised a great influence over religion and literature in Bohemia, and paved the way, as it were, for the later Hussite movement. Andrew of Duba is the reputed author of *The Book of the Old Lord Rosenberg and The Exposition of the Laic of the Bohemian Land*. Smil Flaska, Lord of Pardubitz, composed the didactic and satirical poems, "Father's Advice to his Son," "Contest between Water and Wine," "Dispute between Body and Soul," "New Council," and "The Groom and the Scholar." They abound in local allusions and are a rich mine of information for the culture history of the country.

Second Period (1410-1620).—The golden age of Czech literature.

The reformer John Huss, who, by the religious movement he inaugurated, contributed so powerfully towards the assertion of nationality by the Czechs, gave an immense impulse to the development of Czech literature, and 1410—the year of his open breach with Rome—is commonly considered the beginning of a new era. Though a master of the Latin tongue, Huss preferred Czech for works which were designed for the people as a whole, and the language received at his hands a perfection which it had never before attained. Since his time Czech has undergone comparatively little change from a linguistic point of view. Huss adopted as his basis the speech in actual use around Prague. He contributed, moreover, to the development of the language by grammatical works like his *Czech Orthography* (published in 1857 by Sembera). After the death of Huss the Moravian Brethren assiduously cultivated the spirit of nationalism and directed their energies to developing their native idiom. Among these champions of the people the following are the most noteworthy: Peter Chelčický (1390-1460), a pupil of Huss, was the theoretical expounder of his master's doctrines. In his works—in such as *The Net of Faith* and *Book of Expositions of Sunday Lessons*—various religious and political questions are treated in a surprisingly liberal manner. Other writers of distinction of this period are Victorin Cornelius Věšrd (1460-1520), the author of *Nine Books of Laics . . . in Bohemia*, and Ctibor Cimburg (1437-94), who wrote the famous *Toračov Book*—only two out of a long line of famous jurists, who devoted their time and labors to the scientific exposition and systematization of Bohemian law. Their works, written in masterly style, contributed much to the progress of the Czech juridical language. These two, with several others, constituted the Hussite minority among the humanists who made their appearance in Bohemia with the Renaissance. The other, more numerous, faction of the humanists was, strange as it may seem, solidly opposed to the doctrines of Huss. Among these were Bohuslav of Lobkovic (1462-1510) and Rehor Hrubý of Jelení (1450-1514). Lobkovic collected the most remarkable library of his time, wherein he was greatly helped by the introduction of printing in Bohemia in 1468, when the *Trojan Chronicle*, the first book to be printed in the Czech language, appeared at Pil-

sen. Lobkovic and his contemporaries laid all subsequent Bohemian literature under deep obligations. They translated Greek and Latin classics, such as Cicero, Seneca, and Isocrates; wrote Latin poems, compiled lexicographical works (such as the *Lexicon Symphonum*) of the Czech, Greek, Latin, and German languages, by Siegmund Hrubý (1497-1554), son of Rehor Hrubý. Grammatical studies of the Czech language were embodied in Jan Blahoslav's (1523-71) *Czech Grammar* (1571). It contains disquisitions on the subject of how to translate idiomatically various words, phrases, constructions, etc. Literary and scientific activity was at its height, and such men of science as Tychó Brahe and Kepler made Bohemia their home. The Bohemian historians of this period combined with their patriotic zeal a scientific preparation and seriousness of purpose which made their work especially valuable and reliable. They found their prototype in the anonymous *Old Bohemian Annals*, embracing the period of 1378-1527. Adam Veleislavín (1545-99), whose *Historical Calendar* is his best-known work, represents the highest type among these historians. Václav Hájek (?-1553) is the author of a *Chronicle* more interesting than accurate. Jan Blahoslav, who has been mentioned above, wrote an excellent history of the Moravian Brethren, of whom he was a Bishop. He is also famous for his supervision of the Czech translation of the Bible from the original tongues, which is for the Czech what the King James Version of the Bible is for the English. Blahoslav did not live to see his work printed: it was published in 6 vols. in 1579-93, at the expense of Jan of Siegmund Hrubý (1497-1554), son of Rehor Zerotin, a Moravian patron of letters, and is known as the *Kralitz Bible*. The unusual vigor displayed in the domain of prose and the widening of the intellectual horizon were naturally communicated to the field of poetry. Prince Hynek Podebrad (1452-92) wrote his *May Dream* and other poems which won favor. Nicholas Dačický (1555-1626) composed a satirical poem, *Prostoprada*, and many works of an historical character. Among the religious poets Jan (1500-72), a Moravian bishop, deserves special mention. The greatest poet of the latter part of this period, which is known as the "golden age," was Simon Lomnický (1552-after 1622). His works include didactic and satirical poems and sacred dramas. Chief among them are the satire *Cupid's Arrow*, for which the King, Rudolph II, ennobled him and granted him an annuity; and the didactic *Short Precept for a Young Householder*, which is full of valuable allusions to the manners and customs of the time.

Third Period (1620-1774).—In the battle at the White Mountain in 1620 the Bohemians lost their political independence. Seven years later Ferdinand I of Austria made Catholicism the state religion of Bohemia. The works of the Protestant writers that had made the golden age so brilliant were now seized everywhere and destroyed. Nevertheless, it was during the opening years of this period that Czech literature reached its highest stage of purity and finish in the works of Karl Zerotin and Jan Komenský. Karl Zerotin (1564-1636), great as are his polemical and historical writings, acquired a lasting fame through his enormous correspondence, in which he stands in the very first rank with the few famous letter writers

of the world. Jan Amos Komenský (see CO-MENIUS) (1592-1670), who became one of the great educational reformers, spent his life in exile, like Karl Zerotín. His *Magna Didactica*, *Jonna Linguarum Reserata Aurea*, and *Informatorium* form his permanent contributions to the domain of pedagogy, philosophy, and religious controversy; they, besides, advanced materially the stylistic standard of Czech literature. His purely literary work, *Labyrinth of the World and Paradise of the Heart*, is naturally more important as a product of pure literature. All the other writers of this period are of little importance. The systematic efforts of the Hapsburgs to crush the Czechs were successful. Higher society became Germanized, the Czech language was heard only in out-of-the-way hamlets, and Czech books became a great rarity. The works of the Jesuit writers of the period, who employed the Czech language for religious propaganda among the masses—Sturm, Berlička, Steyer, and Koniáš—are full of barbarisms, monstrous forms and words. In 1774 Maria Theresa enforced by a decree the use of German in the intermediate schools as the language of instruction.

Fourth Period—Renaissance (1774 to the present day).—The forcible suppression of the native tongue in the common schools of Bohemia produced results entirely contrary to those expected and met a vigorous protest. Count Kinský published in German a plea for the Czech language under the title *Erinnerung über einen hochwichtigen Gegenstand* (1774), which was followed in 1775 by Balbin's *Dissertatio Apologetica Linguae Slovacicae*, published by Pelzel. Pelzel himself (1734-1801) was one of a number of young scholars who devoted themselves to the study of their native tongue and the history of their country. Thus appeared Fr. Thoma's *Bohmische Sprachlehre* (1782) and K. I. Thám's *Kurzfassste böhmische Sprachlehre* (1785), which laid the foundations for the study of the language. Pelzel's own contributions were: *Typus Declinationum Linguae Bohemicae Novo Methodo Dispositarum* (1793); *Grundsätze der böhmischen Grammatik* (1795); and, especially, his historical works, of which the *New Bohemian Chronicle* was chief. These latter works awakened interest among the Czechs in their own history. A chair of Czech language was established at Prague in 1793 (Pelzel). The greatest name of this period of Czech literature is that of Josef Dobrovský (1753-1829), the "patriarch of Slavic philology." In his works on grammar and literary history he gathered enormous lexical materials, and the historical and comparative method brought him to the discovery of the richness of the ancient classical language, to the study of which his main efforts were directed. It is true that he made a *Collection of Czech Proverbs* in 1804, but all his works were written in German. Such men as Procházka, Rulík, Puchmayer, Jan Nejedlý, V. Nejedlý, Hněvkovsky, and others wrote pamphlets for the instruction of the people, compiled dictionaries and grammars, translated the classics of European literature, published periodicals, composed plays for the theatre, and even poetry in the sentimental style of the idyls of Gessner. These attempts met with very serious obstacles, owing to the imperfect state of the language, which was practically that of the old language of the classical period and which naturally

lacked terms for new ideas and concepts that had come into vogue during the third period. The language was brought to its final state of perfection in the works of Jungmann (1773-1847), the most illustrious name of the early renaissance. His translation of *Paradise Lost* (1811), an almost incredible *tour de force*, widened the horizon of poetical speech; his *Czech Dictionary* contained the vocabulary of the language; while his *History of Czech Literature* presented a complete survey of all the literary remains. He was particularly happy in coining new words, and whenever this expedient proved unsatisfactory he borrowed from other Slavic languages, more commonly Russian and Polish. The four other names that are most closely linked with that of Jungmann as leaders of the renaissance of Bohemia are Kollar, Šafárik, Palacký, and Hanka. Kollar (1793-1852), poet and scholar, is famous for his *Daughter of Slava* (1824), one of the poetic masterpieces of the Czech language, and his numerous prose works, among which that *On the Literary Reciprocity between the Families and Dialects of the Slavic Nation* (1831) advocated literary Pan Slavism. Šafárik (1795-1861) was one of the greatest philologists the Slavic countries have produced. Among his works, his *Slavic Antiquities* (1837) and editions of many literary monuments are works of importance. Palacký (1798-1876) is a historian, whose *History of Bohemia* (5 vols., 1836-67) presents an ideal combination of critical judgment, profound erudition, and striking style. Along with them may be mentioned Hanka (1791-1861), who discovered the manuscripts of Grüneberg and Koniginhof and published a number of other important remains of Czech antiquities. The greatest poet of the period is František Ladislav Čelakovský (1799-1852), whose *Echoes of Russian and Czech songs* and the long poem *The Rose of a Hundred Leaves*, together with the poetic works of Kollar, were most responsible for the reawakening of the poetic spirit of the nation. Other names of importance are those of the lyric poets Jablonský and Vinařický, the epic writers Wocel, Marek, Holý, and Erben, and dramatists like Klicpera and Tyl. Poetry seems to have absorbed all the best energies of the nation at that time, and the novel, which holds the chief place of honor in the literature of all other nations, did not reach any high level of development. Most works of fiction dealt with themes from Bohemian history. The most noted novelists are Chochołousek, Tyl, and, especially, Božena Němcová (1820-62), who deals with simple country life. The masterpiece of the latter, *Babička* ('Grandmother'), has been translated into English.

The reorganization of the Austrian Empire on a constitutional basis in 1860-61, which allowed the people of Bohemia scope in the development of political life, and the furtherance of national aspirations, marks the beginning of the modern period in Czech literature. The foundation of a new national theatre at Prague and the establishment of a Czech university by the side of the old one (1882) gave a great stimulus to literary activity. Little by little the narrow "national" current gave way to cosmopolitanism, with Máchas as the leading representative of Byronism. The recognized head of the young generation is Vítěslav Hálek (1835-74). The greatest recent poet is Vrch-

lický (1853-1912), whose *A Year in the South, Pilgrimages to Eldorado*, and the historical dramas *Brothers and Drahomíra*, as well as translations from European classics, are especially noteworthy. Equal in popularity is the poet and novelist Svatopluk Cech, whose best-known work is *Arabský*. Zeyer, Heyduk, Arbes, Vlček, and the two women Eliška Krásnohorská (born 1847) and Karolína Světlá (1830-1899) are the most popular novelists of the present day. Great activity has also been exhibited in the departments of science, philology, and literary history, the most important names therein being those of Jireček, Šembera, Gebauer, and Patěra.

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CZECH MUSIC. See SLAVONIC MUSIC.

CZEGLED, tsé'glád. A market town of Hungary, about 46 miles southeast of Budapest (Map: Hungary, F 3). The inhabitants are chiefly employed in agricultural pursuits, the surrounding country being particularly adapted to the raising of grain, fruit, and cattle. Grain is ground in local mills. Considerable red wine is produced. It is a large military post for cavalry. Pop. (largely Magyar), 1900, 30,106, 1910, 33,942.

CZEKANOWSKI, ché'ká-nóv'ské, ALEXANDER (1832-76). A Russian explorer. He was born in Volhynia and studied at Kiev and Dorpat. Banished to Siberia in 1863 for his participation in the Polish insurrection of that year, he was permitted to settle at Irkutsk in 1868. Here, as the agent of the Imperial Geographical Society, he began a series of geological investigations extending along the lower Tunguska, the Olenek, and the Lena, the results of which were published chiefly in Petermann's *Mitteilungen* (1874 et seq.). Amnestied by the government, he returned to St. Petersburg, where during an attack of melancholy he committed suicide.

CZELAKOWSKY, ché'lá-kóv'ské. See CELAKOVSKY.

CZERMAK, chér'mák, JAROSLAW (1831-78). A Bohemian painter, brother of Johann Nepomuk Czermak, the physiologist. He was born in Prague, and studied in that city under Christian Ruben, in Antwerp under Wappers, and in Brussels under Gallait. His early paintings treated chiefly subjects from the history of Bohemia. They are powerfully conceived and carefully executed, but less rich and interesting in color than the genre scenes treating the southern Slavs, to which he devoted himself after a journey in 1858 through Hungary, Croatia, Bosnia, Dalmatia, and Montenegro. Among his most noteworthy pictures are: "Murder of Wallenstein's Companions at Eger," "Slavonian Emigrants," "Norman Fishermen in a Boat Reading the Bible" (1850); "The

Court Poet of Rudolf II Begging on the Bridge of Prague" (1854; Czernin Gallery, Vienna); "Montenegrin Woman and Child" (1861); "Rape of a Herzegovinian Woman" (1867); "Return of Montenegrins to their Devastated Village" (1877). Consult Hantich, *L'Art tchéque en XIXe siècle* (Paris and Prague, 1904).

CZERMAK, JOHANN NEPOMUK (1828-73). A German physician, born in Prague. He studied at the universities of Vienna, Breslau, and Würzburg, and was appointed a lecturer on physiology and microscopic anatomy at the University of Prague. Subsequently he held a professorship of zoology and comparative anatomy at Graz (1855-56), and of physiology at Cracow (1856-58), Pest (1858-60), Jena (1865-69), and Leipzig (1869-73). At Leipzig he erected at his own expense a laboratory and an auditorium specially arranged for demonstrations in experimental physiology. He is best known for having made notable improvements in the laryngoscope and for having been the first systematically to employ that instrument. His publications include *Der Kehlkopfspegel und seine Verwertung für Physiologie und Medizin* (1860; 2d ed., 1863). Consult the biography by Springer in the *Gesammelte Schriften* (2 vols., Leipzig, 1879), and *Populare physiologische Vorträge* (1869).

CZERNHAUSEN, BARON VON. See CZORNIG, KARL.

CZERNOWITZ, chér'nó-vits (Ruman. *Cernăuți*). The capital of the Austrian Crownland of Bukowina, situated on a hill near the right bank of the Pruth, about 164 miles east-southeast of Lemberg, near the Rumanian and Russian frontiers (Map: Austria, J 2). Its growth has been largely within the last 40 years. Among the noteworthy public buildings are the Archiepiscopal Palace, a handsome Byzantine structure, the Greek Oriental cathedral, copied from the church of St. Isaac in St. Petersburg, the Armenian Church, the sumptuous Jewish synagogue in Moorish style, and a municipal theatre. Czernowitz is the seat of a Greek Oriental archbishop and the governor of the Bukowina. Its educational institutions include the Francis Joseph University, founded in 1875 (about 1000 students), with a library of 94,000 volumes, a gymnasium, industrial and trade schools. It has manufactures of machinery and oil, lumber and beer. It carries on a trade in wool, cattle, and spirits. Pop., 1890, 54,171; 1900, 67,622, of whom 34,441 were Germans, 13,030 Ruthenes, 9400 Rumanians, and 8601 Poles; among them 21,587 Jews; in 1910, 87,128. Up to 1774, when it was occupied by the Austrians, who made it the capital of the Province of Bukowina, Czernowitz was an unimportant village.

CZERNY, chér'né, KARL (1791-1857). An Austrian pianist and composer, born in Vienna. He was at first instructed by his father, Wenzel Czerny (1752-1832), then studied under Beethoven, with whom he was a great favorite, and under Clementi. At the early age of 15 he was in great demand as a teacher and also rapidly won high reputation as a virtuoso. Among his pupils were Liszt, Thalberg, Jaell, and Kullak. He left over 1000 compositions, of which his instructive works for the pianoforte are of permanent value. They are: "Die Schule der Geläufigkeit," op. 299; "Tägliche Studien," op. 337; "Die Schule des Virtuosen," op. 365; "Die

Schule der Fingerfertigkeit," op. 740; and others.

CZERNY, VINCENTZ (1842-1916). An Austrian surgeon, born at Trautenuau, Bohemia. He studied at Vienna, and until 1871 acted as Billroth's assistant. In the latter year he was made professor of surgery at Frieberg-im-Breisgau and in 1877 at Heidelberg. In 1906 he was made director of the Institute for Cancer Experimentation. He introduced important improvements in operative surgery and published the following works: *Ueber die Beziehungen der Chirurgie zu den Naturwissenschaften* (1872); *Beiträge zur operativen Chirurgie* (1878); *Das Heidelberger Institut für experimentelle Krebsforschung* (1912).

CZERNY (chér'né) **GEORGE** (i.e., Black George) (1766-1817). The leader of the Serbians in their struggle for independence, generally known as **KARA** (Turk. *kara*, black) **GEORGE**. He was born, Dec. 21, 1766, in the neighborhood of Belgrade. In 1787 he was involved in a rising against Turkish rule, but later settled down as a cattle dealer. In August, 1801, a band of Janizaries broke into his dwelling and plundered it, and in retaliation he collected a band of malcontents and entered upon a course of guerrilla warfare. Gradually his followers increased; in 1804 he captured the fortress of Shabatz and subsequently invested Belgrade. In the beginning of 1806 he routed the Turks at the rivers Drina and Morava and captured Belgrade in December, 1806. The cause of Serbia was aided by the war which at this time broke out between Russia and Turkey. After the Treaty of Slobosic (July 8, 1808), Czerny George was elected Governor by the people and recognized as Prince of Serbia by the Sultan. The French invasion of Russia in 1812 compelled the latter country to let Serbia shift for itself. Hostilities recommenced; the Turks were successful, and Czerny had to flee to Russia. He afterward went to Austria, where he lived for some time. Meanwhile the freedom of Serbia was secured through the leadership of Milosh Obrenovitch, and in July, 1817, when Kara George returned, intending, as some suppose, to rally his partisans round him for the furtherance of his ambitious schemes, he was murdered at the instigation of Prince Milosh. This was the beginning of a feud between the families of Obrenovitch and Karageorgevitch which lasted into the twentieth century. Kara George's second son, Alexander Karageorgevitch, was Prince of Serbia from 1842 to 1858, but was finally expelled, and the Obrenovitch family held the throne till 1903, when, after the assassination of Alexander I (q.v.), Peter Karageorgevitch, grandson of Czerny George, assumed the crown as Peter I (q.v.). See **SERBIA**.

CZERNYSCHESKY, chér'ní-shév'ské. See **TCERNYSHEVSKI**.

CZERSKI, chér'ská, JOHANNES (1813-93). A German divine, one of the founders of the German Catholics. He was born at Werlubien, West Prussia, and was educated at the Priests' Seminary at Posen. Sentenced to penitential confinement for contracting a secret marriage in 1844, he resigned his vicariate in Silesia and

founded an independent community of Catholics, known as the Christlich-Apostolisch-Katholische Gemeinde. He was excommunicated in 1845. Although he maintained his own views, he participated in the struggles of the German Catholics and upon their downfall devoted himself to quiet religious activity. His most important work is the *Nachlass des sterbenden Papsttums* (12th ed., 1870). He defended his defection from Rome in *Rechtfertigung meines Abfalles von der römischen Hofkirche* (1845).

CZIRKNITZER SEE. See **ZIRKNITZER SEE**.

CZOLGOSZ, chól'gósh, LEON (1873-1901). An American anarchist, the assassin of William McKinley, twenty-fifth President of the United States. He was born of Polish-German parents at Detroit, Mich., and was by trade an iron-worker. He was tried before the criminal term of the State Supreme Court at Buffalo, N. Y., on Sept. 23-24, 1901, and convicted of murder in the first degree. No witnesses were summoned for the defense, but ex-Judge Lewis, of counsel for the prisoner, protected his constitutional and legal rights and at the conclusion of the case addressed the jury in his behalf. The assassin was electrocuted in the State prison at Auburn, N. Y., on Oct. 29, 1901. See **McKINLEY, WILLIAM**.

CZÖRNIG, chér'ník, KARL, BARON VON CZERNHAUSEN (1804-89). An Austrian statistician, born at Czernhausen, Bohemia. He studied at Prague and Vienna, and in 1841 became director of the bureau of administrative statistics at Vienna. In 1850 he represented his district in the Ministry of Commerce, in 1852 was made a baron, and from 1852 to 1863 was leader of a society for the preservation of architectural monuments. In 1859 he was appointed chief of the section of railway affairs in the Ministry of Commerce. In 1863-65 he was president of the central statistical commission, organized by himself. He published an ethnographic chart of the Empire, with text (1855), and other works.

CZUCZOR, tsóó'úsór, GREGELY (or **GREGOR**) (1800-86). An Hungarian poet and linguist. He was born at Andód (County of Neutra), became a member of the Benedictine Order, and from 1825 to 1835 was a professor successively in the gymnasias at Raab and Komorn. In 1835 he was appointed second secretary and archivist of the Hungarian Academy, by which he was commissioned in 1844 to prepare the great lexicon of the Hungarian language (6 vols., 1861-74). Four volumes were edited by him, the remaining two by János Fogarassy (q.v.). His disregard of the historical and comparative method in philology often impaired the scientific value of his work as a lexicographer, particularly in connection with etymologies. His popularity was due chiefly to his epic poems, whose principal hero was John Hunyady. He was imprisoned in 1849 for the publication of his *Riadó*, a poem calling Hungarians to action on behalf of their liberties, but obtained his release under the Amnesty of 1850. His poems appeared collected in 3 vols. at Pest in 1858. Besides his fables and translations of Latin authors, he composed a *Life of Washington*, which ranks among his best works in prose.

D

D The fourth letter and third consonant in the Græco-Roman alphabets. Its form is derived by a rounding of the sign Δ, evidently a cursive corruption of the triangle which is found in the West Greek inscriptions rather than from the familiar form of delta (Δ) seen in most Greek scripts. (See ALPHABET, LETTERS.) Flinders Petrie (*The Formation of the Alphabet*, London, 1912) considers it one of the oldest and most generally used signs in the prehistoric signaries of Egypt. It is probable that it gave rise to the regular hieroglyphic, with value *d* or *du*, the sign of giving, and *da* is one of the earliest and most widespread roots having that meaning. The rounded form is distinctly European, occurring in Athens and Italy and in the Runic inscriptions. The Greek name of the letter, *delta*, is a modification of the Semitic word *daleth* (originally *dalt*), which means a 'door.' The Greek capital, Δ, still retains the shape of the opening of a tent, the kind of door most familiar to a nomadic people. From the rounded form of the capital letter were gradually evolved during the Middle Ages the uncial and minuscule forms, the latter giving rise to our small *d*. Consult E. M. Thompson, *Introduction to Greek and Latin Palæography*, pp. 284 et seq. (Oxford, 1912).

Sound. In sound the English *d* is a dental or rather alveolar (lingual) voiced explosive, made by a contact of the tip of the tongue and the roof of the mouth near the upper front teeth. (Consult Jones, *The Pronunciation of English*, p. 16, Cambridge, 1909.) In French the contact is rather dental than alveolar. (Consult Passy, *The Sounds of the French Language*, p. 72, trans. by Savory and Jones, Oxford, 1907.) The North German *d* is between the English and the French. There is also in Northern English a slightly more cerebral *d*, as in *drown*, made by bending up the tip of the tongue and touching the roof of the mouth farther back than in the so-called dental sound. This is due to its position before the lingual *r*.

Source. English *d* comes: (1) from Indo-Ger. *dh* (Gk. *θ*, Lat. *f*, *d* (with *r*), *b*), as *door*, Gk. *θύρα*, Lat. *foras*; *udder*, Skt. *udhar*, Gk. *οὐθας*, Lat. *uber*; (2) from Indo-Ger. *t* when not immediately preceded by the accent; *hundred*, Skt. *catām*, Gk. *ἐκατόν*, Lat. *centum*; (3) from Germanic *p*, with *l*; *gold*, Goth. *gulþ*; (4) *d* arises as a special development from the affinity of *n* for *d* (as a transfer sound), in such words as Eng. *gender*, Lat. *gener*, Eng. *thunder* (OE.

þunor), *riband* (ME. *riban*). The *d* sometimes disappears, as in *cruel* (Lat. *crudelis*), borrowed from French. The letter *d* is often assimilated, as *affirm*, *accept*, *gossip* (OE. *godsibb*); and in certain linguistic developments it interchanges phonetically with *l*, e.g., *l*, Lat. *Ulysses*, from Gk. *Ὀδυσσεύς*, or with *r* in Lat. *arbitr*, from *ad betere*. According to Grimm's Law, original *d* becomes *t* in English, *z* in German. Thus, Indo-Ger. **dekm*, Eng. *ten*, Ger. *zehn*. *Di* followed by a vowel becomes *j*, as in *journal* from *diurnal*, a phonetic law common to the Romance languages, from which this form is borrowed. Consult Schwan-Behrens, *Grammaire de l'ancien français* (Paris, 1913).

As Symbol. 1. As a numeral, D = 500; \overline{D} = 5000. This use of D *th* denote 500 arose from a confusion with Φ , the original symbol for that number. 2. In Roman names D = Decimus, Divus, Dominus, and Deus. 3. In academic degrees D stands for Doctor. 4. In music D is the second note of the natural scale and is a whole tone above C. It is written in the first added space below the treble clef or on the fourth line; in the bass clef it is on the third line or in the second added space above. (See MUSICAL NOTATION.) 5. In chemistry D = didymium. 6. In reckoning English money (£ s. d.), *d* = pence, penny (Lat. *denarius*). 7. In mathematics D = derivation, *d* = differentiation, Δ = differencing, and δ = variation.

DAB (probably from *dab*, gentle blow). A fish (*Limanda limanda*) closely related to the plaice and flounder (qq.v.). It is common on the sandy shores of northern Europe. It can easily be distinguished from the common flounder by the distinct arch in the lateral line at the anterior end. It attains a length of 12 inches and is much esteemed as food. A nearly related species, the rusty dab (*Limanda ferruginea*), possessing smaller scales, is rather abundant on the eastern coast of North America.

DAB, DABB, or DHABB, dūb (Ar. *ḍabb*, lizard). A lizard of northeastern Africa, as the common spiny-tailed agamoid *Uromastix acontinurus*. Two or more species, about a foot in length, are common in Algeria, Tunis, and Egypt, and in Algeria are called "lézards des palmiers," perhaps because they eat dates. This genus has no voice, and their color, which is very changeable, depends upon the weather, being dull on cool days and much brighter when it is warm. The term is also given to the dried flesh of lizards, especially of the skink (*Scincus officinalis*), preserved for use in medicine among the Arabs.

DAB/BAT (Ar. *ḍabbat*, reptile). The third

sign of the coming of the judgment, the Apocalyptic beast of the Mohammedan religion.

DAB'CHICK (variant of *dob-chick*, a diving bird, from *dap*, to drop bait into water, AS. *doppa*, a water bird, from *dypettan*, to dive, from *dypan*, to dip). A small grebe, as (1) in the United States, the pied-billed grebe (*Podilymbus podiceps*); (2) in England, the little grebe (*Podiceps minor*). See GREBE.

DABNEY, dāb'nī, CHARLES WILLIAM (1855-). An American agriculturist and educator, born at Hampden-Sidney, Va., and educated at Hampden-Sidney College and at the universities of Virginia, Berlin, and Göttingen (Ph.D., 1880). He was professor of chemistry at Emory and Henry College and at the University of North Carolina between 1877 and 1881, director of the North Carolina Agricultural Experiment Station and State chemist (1880-87), and director of the Tennessee Agricultural Experiment Station (1887-90). From 1887 to 1904 he served as president of the University of Tennessee; he then accepted the presidency of the University of Cincinnati. While in the South he added to his other duties those of Assistant Secretary of the United States Department of Agriculture (1893-96) and of president of the Summer School of the South (1902-04). He discovered phosphate and tin-ore deposits in North Carolina. Besides Agricultural Experiment Station reports his publications include: *Old College and New* (1896); *A National University* (1897); *Agricultural Education* (1900; 2d ed., 1904); *The Problem in the South* (1903); *Educational Principles in the South* (1904); *The Relation of Agriculture to Other Sciences* (1904); *Washington—Educationist* (1911).

DABNEY, dāb'nī, ROBERT LEWIS (1820-98). An American Presbyterian clergyman. He was born in Louisa Co., Va., and studied at Hampden-Sidney College, at the University of Virginia, and at the Union Theological Seminary of Virginia, in which he was professor of church history from 1853 to 1883. In the Civil War he served as chaplain of the Eighteenth Virginia Regiment and later became major and chief of staff to General "Stonewall" Jackson. In 1870 he was Moderator of the Presbyterian General Assembly of the South and in 1883 was appointed professor of moral philosophy in the University of Texas. He founded the Austin School of Theology. He published: *Life of Gen. T. J. (Stonewall) Jackson* (1864-66); *Sacred Rhetoric* (Richmond, 1867; 3d ed., 1881); *Defense of Virginia* (1867); *Sensualistic Philosophy of the Nineteenth Century Examined* (1875; 2d ed., 1888); *Theology, Dogmatic and Polemic* (1879; 3d ed., 1885); and the posthumous *Penal Character of the Atonement* (1898) and *Discussions* (4 vols., 1890-97). Consult Johnson, *Life and Letters of R. L. Dabney* (Richmond, 1903).

DABO, LEON (1869-). An American mural and landscape painter. He was born in Detroit, studied in Paris at the Ecole des Arts Decoratifs, the Académie Julian, and under the Spaniard Vierge, and in Rome and Florence under Gagliardi. He began as a mural painter, as may be seen in his decorations of the church of St. John the Baptist in Brooklyn and the frieze in the Flower Memorial Library, Watertown, N. Y. After 1900 he turned to landscape painting under the influence of Whistler and the Japanese, but with a distinct originality. His paintings are usually harmonies in a single or

in related tones, wonderfully blended. They are highly decorative, subtle in the rendition of values, broad and precise in brush work. He has found even more appreciation abroad than in his native country. His favorite subjects are the Hudson, of which he has painted over 100 pictures, or the shores of Staten Island, with the subtle conflict of sunlight and mist, light and shadow. He is represented in the Luxembourg, Paris, in the museums of St. Louis, New York, Washington, Chicago, Detroit, and Tokyo, and in private collections. Among the best of his works are two "Nocturnal Fêtes on the Hudson," "The Wave," "Winter Scene" (Reisinger collection, New York), "Dawn beyond the Hudson" (1910), "The Rocket" (1912), and a portrait of Whistler.—His younger brother, THEODORE SCOTT DABO (1877-), born in New Orleans, paints landscapes, very similar in style. Consult Clemen, in *Kunst für Alle* (Munich, 1910), and the *Studio* for 1906.

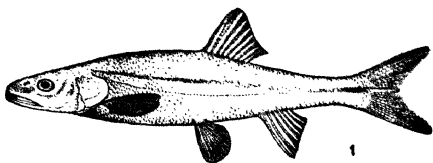
DABOYA (East Indian). The formerly accepted generic name, which has passed into English, of the very deadly Russell's viper (*Daboia*—now *Vipera—russelli*). See VIPER; SNAKE, and Plate of SNAKE.

DABROWSKI, dā-brōw'ské, JAN HENRYK. See DOMBROWSKI.

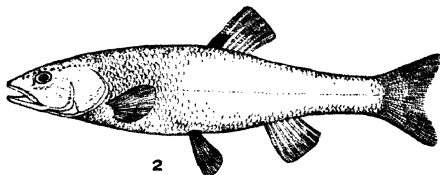
DA CAPO, dā kā'pō (It., from the beginning). A term in music, frequently placed at the end of a phrase or movement, indicating that the performer must return to the beginning of the movement, or to some other part of it, usually marked with the sign § , and finish where the word *fine* is placed. Scarlatti is generally credited with being the first to introduce the use of the *da capo* in his opera of *Teodora* (1693), though it appears that a *da capo* occurs in Tenaglia's opera, *Clearco*, as early as 1661. The words are generally abbreviated *D.C.*, sometimes *D. C. al fine*. See ARIA.

DACCA, dāk'kā, or **DHAKA**. The Islam capital of the Presidency of Bengal, in the division and district of the same name in British India (Map: India, F 4). It is situated on the left bank of the Burhi Ganga, which connects the Brahmaputra with the Ganges, 150 miles northeast of Calcutta. It extends along the river bank for 6 miles; its port is Narryangany. The surrounding country is low and overflows during the rainy season. Many of the old temples and other public buildings are in ruins and give to the city an appearance of decay. Since 1870, however, it has recovered some of its ancient prosperity, and there are now a number of modern public buildings and educational institutions, including a college. The city has modern water works and gas. In 1801 Dacca was a flourishing city of great commercial importance, famous for its muslins, which in the phraseology of the East were characterized as "flowing water," "woven air," and "evening dew." In those days Dacca was filled with magnificent temples and palaces, and its population was estimated at 200,000. It was formerly on the Padma, but the change in the river system of that part of India broke up its inland commerce, while the invasion of British manufactures almost completely ruined the native textile industry. With the construction of the Dacca-Maimansingh Railway line the trade of Dacca has revived, and there is again a demand for the native textile products. Besides textiles, Dacca also produces fine silver and gold plate, filigree work, steel ornaments, carved shells, and

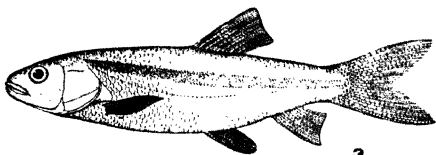
AMERICAN DACE AND MINNOWS



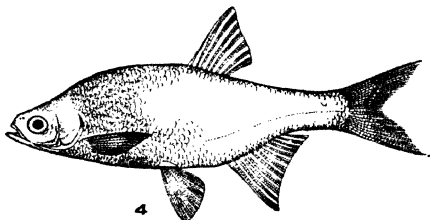
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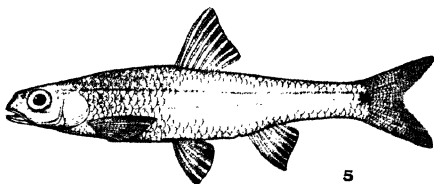
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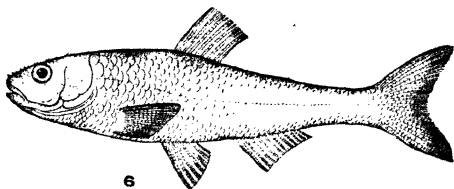
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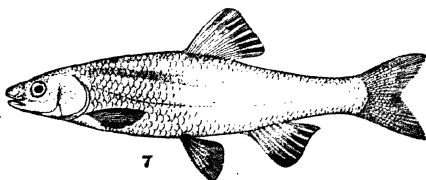
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7

1. SQUAWFISH (*Ptychocheilus oregonensis*).
2. CREEK CHUB (*Semotilus atromaculatus*).
3. UTAH CHUB (*Leuciscus lineatus*).

4. GOLDEN SHINER (*Abramis chrysoleucas*).
5. SPOT-TAILED MINNOW (*Notropis hudsonius*).
6. HORNED DACE (*Notropis cornutus*).
7. SILVER-FIN (*Notropis whipplei*).

boats. There is a considerable trade in elephants. The chief exports are jute, oil seeds, and hides. Besides Dacca College, it has a college of fine arts, a college of medicine, and technical schools. In 1914 it had been decided to combine these into a university. Dacca was the capital of Bengal in the seventeenth century. Since 1912, when Bengal (q.v.) was reunited, it has been occupied by the entire administration for a certain period every year. Pop., 1891, 81,585; 1901, 89,733; 1911, 108,551.

DACE, DARE, or DART (OF. *dars*, dace, dart, ML. *dardus*; ultimately connected with Eng. *dart*, OHG. *tart*, javelin). A fresh-water fish (*Leuciscus leuciscus*) of the family Cyprinidae, belonging to the same genus as the chub (q.v.) and common in the streams of western Europe. The body is robust and covered with rather large scales; the mouth is rather large. The upper parts are dusky blue, becoming paler on the sides and passing into white on the belly; the cheek and gill covers silvery white. The dace is gregarious and swims in shoals. They furnish the angler fair sport both with fly and bait, but the flesh is not highly esteemed. The genus includes many other species both in Europe and in the United States. In the United States the name is applied to species of various genera of the family, especially *Semotilus*, of which the best known is the "horned" dace, or creek chub (*Semotilus atromaculatus*), which commonly frequents brooks from the Hudson valley to that of the Missouri. It grows to a length of 10 inches, is bluish above and creamy below, has a vague dusky band on the side, and its dorsal fin always bears a conspicuous black spot at the base in front, bordered with red in the males. It is one of the favorite objects of boys' fishing, and it is a good fish for the aquarium. Several other species of *Semotilus* occur east of the Rocky Mountains and are called chubs, fallfishes, etc. See Plate of DACE AND MINNOWS

DACELO (transposed from Lat. *alcedo*, also *alcyon*, Gk. ἀλκυών, *alkyōn*, kingfisher, halcyon). A book name for a genus (*Dacelo*) of Australasian kingfishers, representative of a subfamily (Daceloninae) of kingfishers (q.v.), characterized by their large size, harsh voices, and their adaptations to a forest life and a diet of reptiles and insects. The best known is the laughing kingfisher (*Dacelo gigas*), also called laughing jackass and king hunter, which is the largest of kingfishers, and widely distributed throughout Australia. "It is an uncouth-looking bird," says Wheelwright, "nearly the size of a crow, of a rich chestnut brown and dirty-white color; the wings slightly checkered with light blue after the manner of the British jay, the tail feathers long, rather pointed, and barred with brown. It has the foot of a kingfisher; a very formidable, long, pointed beak, and a large mouth, it has also a kind of crest, which it erects when angry or frightened, and this gives it a very ferocious appearance. It is a common bird in all the forests of Australia throughout the year: breeds in a hole in a tree, and the eggs are white. . . . Its principal food appears to be small reptiles, grubs, and caterpillars. . . . The laughing jackass is the bushman's clock, and, being by no means shy, of a companionable nature, a constant attendant about the bush tent, and a destroyer of snakes, is regarded, like the robin at home, as a sacred bird in the Australian forests." See illustration of KINGFISHERS.

DACHSHUND, daks'hunt'. A breed of small, long-bodied dogs, formerly employed in central Europe in hunting badgers, but now kept wholly as pets. See HOUND.

DACIA, dā'shi-ā. The land of the Daci, or Getæ. Its geographical limits were very indefinite until its conquest by the Romans. After that period it comprised modern Transylvania, with adjacent parts of Hungary, Rumania, and Bukowina (Map: Roman Empire, with Article ROME, E 2). The inhabitants, properly called Daoi or Dakoi (Daci), came originally from Thrace. Greek and Roman writers frequently confuse or identify them with their kinsmen the Getæ (q.v.). Their course northward can be only imperfectly traced, but we know that shortly before the time of Alexander the Great (335 B.C.) they had migrated across the Danube. It is not known when or for what reason the Getæ changed their name to Daci. They seem to have been the most valiant of the Thracian barbarians. Curio, the first Roman general to penetrate as far north as the Danube, did not venture to assail them. Julius Cæsar, however, is said to have contemplated their subjugation. In 10 B.C. Augustus sent an army up the valley of the Maros. From this time there was almost continual fighting between the Romans and the Daci, on the whole to the advantage of the latter, who actually compelled their civilized enemies, in the reign of Domitian, to pay tribute, in return for immunity from further raids. In 101 A.D. the Emperor Trajan crossed the Theiss and marched into Transylvania, where he fought a great battle near Torda. The Wallach peasant calls the battlefield, to the present day, *Prat de Trajan* (*Pratum Traiani*, 'Field of Trajan'). The Daci, who were commanded by their famous chief, Decebalus, were defeated. A second expedition of the Emperor resulted in the destruction of their capital, the death of Decebalus, and the loss of their freedom (106 A.D.). (See **TRAJAN'S COLUMN**.) Roman colonists were sent into the country, a bridge was built over the Danube—the ruins of which are still extant—and three great roads were constructed. The chief towns were Apulum and Sarmizegetusa. In 270-275 A.D. the Romans abandoned the country to the Goths, and the colonists were transferred to Mæsia.

DACIER, dā'syā', ANDRÉ (1651-1722). A French classical scholar. He was born of Protestant parents at Castres, in Upper Languedoc, studied at Saumur, and in 1672 came to Paris, where he was employed to bring out, as part of the Delphin Classics (q.v.), an edition of the Latin writer *Pestus* (1681). In 1683 he married Anne Lefèvre, also a Protestant. Two years later both entered the Roman Catholic church. Dacier subsequently became royal librarian, member of the Académie des Inscriptions, and perpetual secretary of the Académie. Dacier's principal works, besides his *Pestus*, are *Œuvres d'Horace en Latin et en Français* (Paris, 1681-89), an edition of Valerius Flaccus, and numerous translations into French of Greek authors, such as Plutarch and Epictetus, all of which, in spite of his erudition, are of mediocre quality, while the expositions and criticisms are shallow.

DACIER, ANNE (1654-1720). The wife of the preceding. She was born at Saumur, and after the death of her learned father, Tanneguy Lefèvre, who had developed her talent, came to Paris, where she acquired such a reputation by her edition of Callimachus (1674) that the

Duke of Montausier commissioned her to edit Aurelius Victor, Dictys Cretensis, Eutropius, and Florus, for the Delphin Classics. Similarity of tastes and employment led to a marriage between her and André Dacier. Besides editing various classical works, she translated the comedies of Terence; the *Amphitryon*, *Epidicus*, and *Rudens* of Plautus, accompanied by an able dissertation on the origin, progress, and mutations of dramatic poetry; Anacreon, Sappho, and the *Plutus* and *Clouds* of Aristophanes. Her admiration of Homer was unbounded and led to her translation of the *Iliad* (1699), and of the *Odyssey* (1708), her masterpiece, which made Homer known for the first time to many French men of letters, and yet involved her in a controversy with two of these men concerning the relative literary merits of the ancients and the moderns. Consult Rigault, *Histoire de la querelle des anciens et des modernes* (1856). Madame Dacier is generally acknowledged to have possessed a more acute and vigorous mind than her husband.

DACITE. A volcanic rock of generally porphyritic texture, characterized by the occurrence of lime-soda feldspar and of quartz, and by mica, hornblende, or pyroxene. These minerals are imbedded in a ground mass or matrix of rock glasses or of a finer-grained aggregate of crystals. The color of the rock is generally gray, but under prolonged weathering it may become brownish. The newer or younger dacites are therefore, in contrast with the older, much less brown in color. The average chemical composition of dacite is: silica, 68 per cent, alumina, 17 per cent, ferric oxide, 2 per cent; ferrous oxide, 1.5 per cent, magnesia, 1.5 per cent; lime, 3 per cent; soda, 4 per cent; potash, 3 per cent. Dacite differs from andesite (q.v.) principally in its higher percentage of silica, due to the presence of quartz and a greater abundance of the light-colored mineral constituents. The name "dacite" has been given because of the great development of this type of rock in Dacia, an ancient Roman province comprising part of modern Hungary and vicinity. Many recent as well as more ancient volcanic lavas are dacite. Dacite graduates into trachyte, rhyolite, and diorite (qq.v.).

DACOITS' (Hind. *ḍakait*, *ḍālāyat*, robber, *dākā*, attack by robbers, from *dāknā*, to shout). The name given to bands of men in India who live by robbery. They resemble the thugs (q.v.) in that a slight religious element seems to enter into their conduct, but plunder, and not murder, is their guiding motive. On the whole, they are a national type of banditti, closely resembling the brigands of Sicily or Greece. Driven out by the British government from Hindustan, they are still fairly active in Burma. Technically, dacoity in British-Indian law means the conspiring of five or more men to engage in any act of theft.

DA COSTA, CLAUDIO M. See COSTA, CLAUDIO M. DA.

DACOSTA, dā-kō'stā, GABRIEL. See ACOSTA, GABRIEL.

DA COSTA, dā kō'stā, ISAAC (1798-1860). A Dutch poet and Protestant theologian, born in Amsterdam. He studied at Leyden, in 1818 received the degree of LL.D., and that of Ph.D. in 1821. Though by parentage he was a Portuguese Jew, he embraced Christianity in 1822, and became a professor and director of the Free Scotch Church Seminary. He was an effective public

lecturer. The friend of Bilderdijk, the latter's poetic mantle fell upon him, and he was thenceforth esteemed the greatest of Holland's poets. The more noteworthy of his volumes of verse are: *Prometheus* (1820); *Poems* (1821-22); *Festive Songs* (1828); *Hagar* (1840); *The Battle of Nieuwpoort* (1859). Da Costa translated Byron's *Cain* and, as a theologian, produced a *Gospel Harmony and Israel and the Gentiles*, both translated. He died at Leyden, April 28, 1860. His poems were collected and published by Hasebroek (1861-62).

DA COSTA, JACOB MENDEZ (1833-1900). An American physician, one of the greatest clinical teachers of his time. He came of an ancient Portuguese family long resident in St. Thomas, West Indies, received his early education in Europe, chiefly in Dresden, and his medical training at Jefferson College, Philadelphia, from which he graduated in 1852 at the age of 19. Subsequently he studied in Paris and Vienna and returned to Philadelphia to establish a practice. He specialized in pathology and clinical medicine and soon became a factor in the medical life of his city, his method of teaching and ability as a lecturer attracting much attention. In 1858 he became identified with Jefferson College, first as instructor, then as clinical lecturer, and finally, in 1872, as professor in the chair of practice. In 1858 he was made a fellow of the College of Physicians of Philadelphia, and he served as its president in 1884-85 and 1893-98. He was a member of the staff of the Pennsylvania Hospital from 1865 until the time of his death, was also connected with the Philadelphia Hospital and with the Episcopal and the Children's hospitals of that city, and took an active part in medical organizations—he helped to found the Pathological Society of Philadelphia and was its president from 1864 to 1867, and was president of the Association of American Physicians in 1897. He was made honorary and corresponding member of many learned and scientific organizations, and the degree of LL.D. was conferred upon him by Jefferson College, the University of Pennsylvania, and Harvard. As a writer, his style is clean cut, scholarly, and entertaining. His work includes many papers and addresses, among these being: *Harvey and his Discovery* (Philadelphia, 1879); *Modern Medicine* (Philadelphia, 1872); *The Physicians of the Last Century* (Philadelphia, 1857); *The Scholar in Medicine* (Boston, 1891). His chief work is his textbook on *Medical Diagnosis* (9th ed., Philadelphia and London, 1900). This has been translated into several foreign languages.

DACRES, dā'kērz, JAMES RICHARD (1788-1853). An English naval officer, born at Lowestoft. He entered the navy in 1796, accompanied the expedition sent against Ferrol, and in 1806 was promoted captain and put in command of the sloop *Bacchante*. After distinguished service he was in 1811 transferred to the *Guerrière*. Upon the loss of that vessel in the famous contest with the *Constitution* he was taken aboard the latter—he and Captain Isaac Hull were intimate friends—and subsequently paroled at Boston. By the court-martial assembled in 1812 at Halifax he was honorably acquitted of all blame for the surrender of his vessel. In 1815, while commanding the *Tiber*, he captured the *Leo*, an American privateer. He became a rear admiral in 1838, commander at the Cape of Good Hope in 1845, and vice admiral in 1848.

DACRES, SIR SYDNEY COLPOYS (1805-84). An English admiral. He entered the navy in 1817 and was captain of the flagship of the Channel fleet under Sir Charles Napier from 1847 to 1849, and as commander of the *Sans Pareil* took a prominent part in the bombardment of Sebastopol, for which he was made C.B. He was made rear admiral in 1858, and commanded the first ironclad squadron. He was second in command on the North American station during the controversy over the Trent affair (1861) and commanded the Channel squadron in 1863-66. In 1868 he was appointed Senior Lord of the Admiralty and in 1872 governor of Greenwich Hospital. He had been promoted admiral in 1870. In 1875 he retired.

DACRYDIUM (Neo-Lat., from Gk. δακρυδιον, *dakrydion*, dim. of δάκρυ, *dakry*, tear; referring to the drops of gum exuded by the tree). A coniferous genus of lofty trees of the family Taxaceæ, belonging to the podocarp tribe. The species are chiefly natives of Australia and New Zealand. *Dacrydium franklinii* is called Huon pine, although it is not a pine. Its timber is harder than any Baltic pine and is excellent for spars for naval purposes. The tree attains a height of 100 feet, and a diameter of 6 feet. The wood is light, tough, and very durable. It is said to be one of the best Australian woods for carving. *Dacrydium cupressinum* and *Dacrydium kirkii* are two species occurring in New Zealand, where they are large trees of considerable economic value. The fleshy seeds of both species are edible. The young twigs of *Dacrydium cupressinum* are sometimes used for making a kind of beer. Closely related are the species of *Podocarpus*, of which there are about 40 species in Asia and through the islands of Australia. *Podocarpus totara* is the most valuable timber tree of New Zealand, where it attains a height of 60 to 100 feet and a diameter of 6 to 8 feet. The bark is extensively used for roofing houses. *Podocarpus spicata* and *Podocarpus excelsa* are other species of value.

DACTYL (Lat. *dactylus*, Gk. δάκτυλος, *daktylos*, finger). The name of a measure, or "foot," in Greek and Latin versification. It consists of one long and two short syllables, as in the word *omnibus*, and was so called from its resemblance to the finger, which consists of three joints—one long and two short. The same name is applied to a trisyllable measure in English verse, consisting of one accented syllable and two unaccented syllables, as in *déstinny*. (See VERSIFICATION.) Dactylic verses consist of dactyls and equivalent feet. See HEXAMETER.

DACTYLIS. See ORCHARD GRASS.

DACTYLOLOGY (from Gk. δάκτυλος, *daktylos*, finger + λόγια, *logia*, reasoning, from λέγειν, *legéin*, to say). The art of communicating thought by the fingers. See DEAF MUTE.

DACTYLOMANCY. See SUPERSTITION.

DACTYLS, DACTYLI, DAKTYLOI. In Greek legend, a supernatural folk who dwelt on Mount Ida in Phrygia. They were the discoverers of copper and iron and were deeply versed in the metal-working arts. The legends later transferred them to the Cretan Mount Ida and identified them with the Corybantes. They were originally three in number—Kelmis, the Smelter; Damnameneus, the Hammer; and Acmon, the Anvil. Later, they were increased to 5, 10, 52, and at last 100.

DADDY LONGLEGS. 1. In the United States, the long-legged, spider-like creatures of

the arachnid family Opilioniæ. (See HARVEST-MAN.) 2. In England, the flies of the family Tipulidæ, which includes the crane flies—big, long-legged insects, resembling exaggerated mosquitoes, that swarm in late summer in grassy and bushy places. The eggs are not known. The larvæ of some live in damp earth, decaying wood, etc., and of others in the water, feeding on vegetable material, diatoms, etc. One curious wingless genus (*Chirona*) contains the "snow insects" occasionally seen in swarms on the surface of snow banks. Some of the earth-inhabiting forms injure the roots of grain and other grasses. More than 1000 species have been described.

DA'DO (It., a die). In architecture, the die or body of a pedestal. It is also applied to the lower part of the wall of a room, between the baseboard and the chair rail or cap molding, whether wainscoted with wood or other material, or otherwise decoratively treated to distinguish it from the rest of the wall. It is usually not over 3 or 4 feet in height. See WAINSCOT.

DADOK'YLON (Neo-Lat., from Gk. δάς, *das*, torch + ἔλων, *ylon*, wood). Fossil wood of Paleozoic age, found in the Devonian rocks of Europe and America, and having a microscopic structure like that of Cordaites wood and Araucaria wood. See CONIFERÆ. CORDAITES.

DÆDALUS (Lat., from Gk. Δαίδαλος, *Daidalos*, literally, the 'cunning worker'). The mythical sculptor, placed by Greek legend at the beginning of native art, to whom were attributed many early wooden statues, apparently of the type of the early nude male figures, such as the "Apollo of Orchomenos." The early forms of the legend seem to have made him a native of Crete, and there seems to have been an early school of Cretan artists, the Dædalidae, who claimed him as their ancestor. Later, under Athenian influences, however, the more common forms of the myth arose. In these Dædalus was a descendant of the Athenian royal race, the Erechthidae, and having killed his pupil Talos, fled to Crete, where he was received by King Minos, for whom he built the Labyrinth for the Minotaur, and, for Pasiphaë (q.v.), the wooden cow. These stories seem to imply that Crete exercised an important influence on early Greek art. Having incurred the wrath of Minos, he fitted wings to his son, Icarus, and himself, and fled across the sea. Icarus flew too near the sun, the wax which fastened the wings melted, and he was drowned in the Icarian Sea. Dædalus escaped to Italy, where he built the temple of Apollo at Cumæ, and then crossed to Sicily, where local legend attributed to him many architectural works. Consult: Kuhnert, *Dædalus* (Leipzig, 1886). Pottier, in Daremberg and Saglio, *Dictionnaire des antiquités* (Paris, 1873). Robert, "Die Daidaliden," in *Archæologische Mittheilungen* (Berlin, 1886); E. A. Gardner, *A Handbook of Greek Sculpture* (London, 1911).

DÆDALUS OF SICYON, δαίδαλος. A Greek sculptor, who lived in the earlier half of the fourth century B.C., the son of Patrocles of Sicyon, and kinsman of the famous Polyclitus (q.v.). One of his earliest works was a "Trophy," erected at Olympia by the Eleians to commemorate a victory over the Lacedæmonians. His other productions include the figures of "Two Boys Using the Strigil," the portrait statues of several of the victors in the Olympian or the Pythian games, and statues of Nike and

Arcadias in a large group set up at Delphi, by the Arcadians, after a victory gained in 369 B.C. over the Spartans. Consult Daidalos, 2, in Pauly-Wissowa, *Realencyclopädie der klassischen Altertumswissenschaft*, vol. iv (Stuttgart, 1901).

DÆDICURUS. See GLYPHODON.

DÆMON. See DEMON.

DÆMON/ELIX (Neo-Lat., from Gk. δαίμων, *daímōn*, demon + ἥλιος, *helios*, spiral). A problematic fossil found in great numbers in the sandstones of the Loup Fork Tertiary of northwestern Nebraska and adjacent portions of Wyoming, and known to the ranchmen of the vicinity by the name of Devil's corkscrews. The fossil ranges through a thickness of about 250 feet of sandstones and varies in form from delicate fibrous structures in the lowermost beds, through cylindrical, spherical, cakelike, and irregularly twisted forms in successively higher horizons, till in the uppermost beds it assumes the form of a vertical left- or right-handed spiral spring, 2 to 10 feet high, with or without a central axis, and usually with a more or less curved fusiform or cylindrical "trunk," 3 to 20 feet long, that rises obliquely from the base of the spiral. The fibrous forms penetrate the sandstone and are also found traversing the surfaces of skulls and bones of fossil mammals entombed in the same beds. The spiral screws are wonderfully regular in their proportions, both as to the angle of pitch of the spiral and as to the increase in diameter of the same from bottom to top. The whole mass of the fossil consists of an aggregation of twisted plant fibres, which on examination with a microscope prove to have a simple cellular structure like that of parenchyma tissue. This cellular structure has been found in all parts of the fossil and clearly indicates its vegetable nature. The beds in which the Dæmonelix is found are of lacustrine origin, and it is possible that the fossil is largely of algal affinity. The finding of numerous fossils of burrowing rodents within the corkscrews has, however, led some to consider the latter as well-preserved burrows of animals; and no single suggestion as to the manner of origin seems as yet to cover all the varied features. Prof. E. H. Barbour, the discoverer of Dæmonelix, has described it fully in a paper on the "Nature, Structure, and Phylogeny of Dæmonelix," in the *Bulletin of the Geological Society of America*, vol. viii (Rochester, 1897). Consult also O. A. Peterson, "Description of New Rodents and Discussion of the Origin of Dæmonelix," in *Carnegie Museum Memoirs*, vol. ii (Pittsburgh, 1905).

DÆNDELS, dān'dels, HERMAN WILLEM (1762-1818). A Dutch general. He was born at Hattum, in Gelderland, where he took part in the revolutionary disturbances that broke out in 1787. Compelled to seek refuge in France, he rendered important service to Dumouriez in 1793, in the latter's campaign against Holland, was made brigadier general, and, after the proclamation of the Batavian Republic, entered its service as lieutenant general. In 1799 he commanded a division of the Republican army, which compelled the Anglo-Russian forces to surrender. Dændels became successively Governor of Münster, commander in chief of the Dutch cavalry, marshal of Holland, and Governor-General of the Dutch East India possessions. This last office he held from 1808 to 1811 and discharged his duties with great ability and prudence. He participated in the Russian cam-

paign of 1812-13 and distinguished himself by his stalwart defense of Modlin. On the overthrow of Napoleon his services were secured by the new King of Holland, William I, who intrusted him with the organization of government in those colonies on the west coast of Africa which had been restored to the Dutch. In this capacity he labored with energy and success until his death. The work he published (1814) on his administration of Java was an important contribution to our knowledge of that island.

DAET, dā-ät'. A town of Luzon, Philippines, on a river of the same name, in the Province of Ambos Camarines (Map: Philippine Islands, D 3). It is situated near the coast, 138 miles southeast of Manila. It has the ruins of an old Spanish fort. There are gold mines in the vicinity. Pop., 1903, 13,423.

DAETODIL. See NARCISSUS.

DAFNE. The first, strictly speaking, of the Italian operas, produced in 1594, under the auspices of the Society of the Alterati. The score was by Peri, and the libretto by Ottavio Rinuccini. When translated by Opitz to the new music of Heinrich Schütz, it became the first German opera as well (1627).

DAFOE, dā'fō, JOHN WESLEY (1866-). A Canadian journalist. He was born at Bangor, Hastings Co., Ontario, and was educated at the Arnprior high school. After some experience as a school-teacher, he became in 1883 the parliamentary correspondent of the *Montreal Star* and in 1885 was appointed editor of the *Ottawa Evening Journal*. In 1886 he went to Winnipeg, Manitoba, and for six years was a member of the editorial staff of the *Manitoba Free Press*, the most influential Liberal journal in the Canadian Northwest. In 1892 he became editor of the *Montreal Herald* and in 1895 joined the editorial staff of the *Montreal Star*. In 1901 he returned to Winnipeg and was appointed editor of the *Manitoba Free Press*. In 1906 he was a delegate to the Commercial Congress of the Empire at London, England; and in 1909 he was a delegate to the Imperial Press Conference, London. Among his publications are: *The Fortunes of a Manitoban* (1891). *Western Canada* (1907); *The Imperial Press Conference* (1909).

DAGAMI, dā-gā'mě. A town on the Binahaan River, of the island Province of Leyte, Philippines, 15 miles southwest of Tacloan (Map: Philippine Islands, E 5). It is in a plain, near the east coast of the island. The women of Dagami make fine embroidery. Pop. in 1903, 12,391.

DAGAN. See DAGON.

DAGDEN. See DAGO.

DAG'GER (Icel. *daggdr*, dagger, from Ir. *dagear*, Welsh *dagr*, dagger, from Bret. *dag*, OGal. *daga*, knife). A short sword, or two-edged, sharp-pointed knife. It is one of the oldest forms of the *arme blanche* and has its modern representative in the infantry sword bayonet. (See BAYONET.) In the Middle Ages soldiers often fought with sword or rapier and dagger, the latter being held in the left hand. (See FENCING.) The dagger proper has ceased to be part of the modern military equipment, except with some of the native or tribal troops of the British and Russian empires.

The dirk, practically a dagger, is still carried by the Highlanders of the British army, but only as an ornamental part of their national dress. The American bowie knife (q.v.) is in

effect a dagger. Many kinds of daggers are used by the Filipinos and Moros, the Malay *Kreese* being one of the most common. The *poniard*, *stiletto*, *misericorde*, and *anlace* are daggers, as is also the Indian *khuttar*.

DAGGER MOTH. A moth of the noctuid genus *Acronycta*, so named because of dagger-shaped marks on the wings.

DAGGERWING. One of the small, slender-tailed North American butterflies of the nymphalid genus *Timetes*.

DAGHESTAN, dā'ge-stān' (Pers., place of mountains, from Turk. *dagh*, *tagh*, mountain + Pers. *stān*. OPers. *stāna*, place, from *stā*, Skt. *sthā*, to stand). A province of Transcaucasia, Russia, bounded by the Caucasian Province of Terek on the north, the Caspian Sea on the east, Baku on the south, and the Caucasus mountain chain on the west (Map: Russia, G 6). Area, 11,471 square miles. A large portion of the territory belongs to the region of the Caucasus Mountains. Behind a narrow strip of level coast land rise heavily forested mountain ridges with single peaks attaining an altitude of 14,000 feet. The climate of the plateau is severe: the rainfall is everywhere meagre, varying from 17 to 21 inches per annum. With the aid of irrigation the coast districts produce cereals, wine, fruit, cotton, and tobacco. Cattle and sheep are raised in the mountain regions. Sulphur, salt, and copper are worked. The commerce is insignificant, and the transportation facilities inadequate. Pop., Jan. 1, 1911, 689,300, mostly Lesghians; the remainder being made up of Tatars, Georgians, and a few Russians, Jews, and Persians. The natives are chiefly Mohammedans; educational facilities are very meagre.

The seat of the provincial government is Temir-Khan-Shura, and the chief commercial centres are Darbent (q.v.), and Petrovsk, both on the coast. Until 1812 Daghestan formed a province of Persia, although the inhabitants enjoyed partial independence under native khans and manifested their opposition to Persian rule by periodic revolts. It then passed into the nominal possession of Russia, whose authority was not established until after a fierce struggle of many years. (See SHAMYL.) Daghestan still continued to be ruled by native khans until 1868. The last outbreak of the natives against Russian rule occurred during the Russo-Turkish War in 1877.

DAGNAN-BOUVERET, da'nyān' būv'rā', PASCAL ADOLPHE JEAN (1852-). A French historical and portrait painter. He was born in Paris, Jan. 7, 1852, studied under Gérôme, and won his first important success with "A Wedding at the Photographer's" (1879, Lyons Museum). "The Consecrated Bread" (1886), now in the Luxembourg, admirably displays his management of light in interiors and is painted with a sentiment that is poetic, yet quiet and serene. Other important paintings are: "The Conscripts" (1891, Ministère des Beaux-Arts); several Breton scenes; "Painting" and "Lady with a Child" (Palais des Beaux-Arts); "Madonna" (Pinakothek, Munich, and "Madonna of the Rose" (Metropolitan Museum, New York). Bouveret was made Chevalier of the Legion of Honor in 1885 and received the first medal at the Salon of 1889 for his "Breton Women at the Pardon." He painted excellent portraits of Gérôme, Courbet, and other prominent persons. Among his later pictures are "Spanish Dancer" (1909) and "Marguerite au

Sabat" (1912). His work is characterized by a fine color sense and excellent draftsmanship. Consult Van Dyke, *Modern French Masters* (New York, 1896).

DA'GO. A name originally given by sailors to Spaniards, Portuguese, and Italians in general. It is said to be a corruption of the Spanish name Diego, equivalent to the English name James, or Jack. By others it is supposed to be a title given exclusively to those born of Spanish parents. Still others believe it to be purely a corruption or nickname derived from *hidalgo*, which came to be applied to any foreigner from Latin Europe. Whatever the derivation of the word may have been, it is a term of opprobrium applied chiefly to the lower class of Italian immigrants in America.

DAGÖ, dā'gö, or **DAGDEN**, dā'gden. An island in the Baltic Sea, belonging to the Russian Government of Esthonia. It lies near the entrance to the Gulf of Finland, north of the island of Ösel, is quadrilateral in shape, and covers an area of 370 square miles (Map Russia, B 3). The surface is mostly low land, partly covered with marshes; the rest is chalk land and infertile. Fishing and farming are the main industries. Pop., about 16,400, composed of Esthonians, Swedes, and Germans. Dagö belonged to Denmark until 1645, when it was acquired by Sweden, and was annexed to Russia in 1721.

DAGOEBERT, Fr. pron. dā'gö'bär', I (?-638). King of the Franks, son of Clotaire II. He ruled in Austrasia from 622 to 632 and in Neustria and Burgundy from 628 to 638. In 632 he gave Austrasia to his son Sigibert. Consult Albers, *König Dagobert in Geschichte, Legende und Sage* (Kaiserslautern, 1884).

DAGOEBERT, CHANSON DU ROI (Fr., song of King Dagobert). A French song, in which the characters are King Dagobert and St. Eloi, his counselor. It became very popular as a political song, the couplets being altered to fit different political conditions. A notable version which sprang up in 1814, aimed at Napoleon, was suppressed by police regulations.

DAGON, or **DAGAN**. A god worshiped by the Philistines, the Canaanites, the Amorites, the Chanaites in Mesopotamia, the Akkadians, and the Assyrians. In the Old Testament he is mentioned as a deity to whom a temple was dedicated at Gaza (Judg. xvi. 23), and another at Ashdod (1 Sam. v. 1 ff.; 1 Macc. x. 83 f., xi. 4). There seems to have been another at Ashkelon (Jerome to Isa. xlv. 1). There was a Beth Dagon in Judah (Josh. xv. 41) and another in Asher (Josh. xix. 27). According to Philo Byblius, Dagon was one of the highest gods of the Phenicians. The name Dagan takala occurs in the Amarna tablets (317, 318, ed. Knudtzon). Dagon was the chief god of Tirkia, the capital of Chana, south of the Chaboras in southern Mesopotamia. Names compounded with Dagan meet us as early as in the days of Manishtusu, King of Kish, who is now supposed by Poebel (*Or. Lit. Zeitung*, 1912, pp. 481 ff.) and Ed. Meyer (*Gesch. d. Altertums*, 1913, 3d ed., i, 2, p. 517), to be the second successor of Sargon I of Akkad. Two kings of the dynasty of Isin have names compounded with Dagan, and Isme Dagan occurs at an early time in Assyria. (See BABYLONIA; ASSYRIA.) Dagon was probably an Amoritic deity, adopted by the Canaanites, and at a much later time by the invading Philistines, who probably found.

him worshiped in the cities of the Shephela which they conquered. Since the time of Sargon I of Akkad he may have been recognized to some extent in Babylonia, but it was no doubt through the Amoritic dynasties in Babylonia and Assyria that his worship was established there. Priests and worshippers avoided stepping on the threshold of Dagon's temple at Ashdod, and this custom was explained in Israel as due to the fall of a part of the statue of Dagon on the threshold (1 Sam. v. 2-5); the same custom seems to have prevailed in Jerusalem (Zeph. i. 9) and probably originated everywhere in fear of, or respect for, the guardian spirits watching the threshold. Concerning the character of Dagon very little is known. Kimchi says that he was half man and half fish, but this may not be based on any tradition, but only on a popular etymology, deriving the name from *dag*, 'fish.' Whether the connection of the name with *dagan*, 'grain,' has any more validity is still uncertain. Consult: Menant, "Le mythe de Dagon," in *Revue de l'histoire des religions*, vol. ix (1886); Jensen, *Kosmologie der Babylonier* (1890); Martin A. Meyer, *History of the City of Gaza*, pp. 118 ff. (1907); Jastrow, *Die Religion Babylonien und Assyrien* (1902-12); Ed. Meyer, *Geschichte des Altertums*; 3d ed., i, 2, pp. 513, 606, 633 (1913).

DAG'ONET, SIB. King Arthur's fool, in the "Round Table" legends.

DAGUERRE, dá'gár', LOUIS JACQUES MANDÉ (1789-1851). A French painter and physicist, inventor of photography in the form of the daguerreotype, born at Cormeilles, Seine-et-Oise. He first became a scene painter under Degoti, and was so successful in this art that he began to paint extensive panoramas and finally evolved the diorama, which attracted much attention. About 1829 he began to interest himself in the discoveries which became famous under his name. He entered into a correspondence with Nicéphore Niépce, who had been studying in the same direction since 1814. Together they invented the art of photography on metal, the well-known daguerreotype process, the improvement of which was to result in modern photography. Before the completion of their experiments Niépce died. In 1839 the discovery was made known, and immediately its value was appreciated. Daguerre was given a pension of 6000 francs and made a member of the Legion of Honor. While he was still laboring to bring his work nearer perfection, he died suddenly at Petit-Brie-sur-Marne, near Paris. He wrote the following volumes descriptive of his inventions. *Historique et description des procédés du daguerrétype et diorama* (1839) and *Nouveau moyen de préparer la couche sensible des plaques destinées à recevoir les images photographiques* (1844). Consult: Ernouf, *Les inventeurs du gaz et de la photographie* (Paris, 1885). See **DAGUERRETYPE**

PROCESS: PHOTOGRAPHY.

DAGUERRETYPE (dá-gér'-ô-tip) **PROCESS** (Fr. *daguerrétype*, from *Daguerre* + Gk. *typos*, *typos*, impression). The original photographic process, as introduced by its inventor, Daguerre, in 1839. The pictures are positive or direct, though they appear as negative when viewed at certain angles, and are the result of the successive action of the vapors of iodine, bromine, and mercury upon a highly polished surface of chemically pure silver. The manipulations involved in conducting the process are: (1) cleaning and polishing the plate: (2) ren-

dering the plate sensitive; (3) exposing it in the camera; (4) developing the latent image; (5) fixing the picture.

A copper plate of moderate thickness is first coated with silver by electroplating and polished as highly as possible; it is then exposed first to the vapor of iodine, and then to the vapor of bromine for a length of time, ascertained in practice by watching the succession of prismatic colors which begin to appear with the first contact of the vapor. The plate is then exposed in a camera, and the development of the latent image, which is the next operation, is effected by subjecting the plate to the action of the vapor of mercury, which attaches itself to the various parts of the picture in proportion as it has been acted on by the light. Those portions of iodide and bromide of silver unaffected by light are next removed by immersing the plate in a solution of hyposulphite of soda; and the picture is subsequently fixed and intensified by pouring over its surface a solution of hyposulphite of soda and chloride of gold and applying heat; by which means it is coated with a thin film of metallic gold and thereby rendered so permanent that it requires a chemical solvent for its removal. It may be mentioned in conclusion that, though Daguerre published in 1839 the first practicable process for taking pictures by the agency of light, his experiments would seem to have been suggested by the researches of Niépce, who about 1820 obtained impressions on silver plates rendered sensitive by being coated with asphaltum saturated with oil of lavender. Consult: Hunt, *A Manual of Photography* (London and Glasgow, 1854). Chapters from this volume, revised by T. W. Smithie, United States National Museum, as "The History of Some Discoveries in Photography," will be found in *The Annual Report of the Smithsonian Institution*, 1904 (Washington, 1905). The Reports for 1903 and 1905 also contain valuable chapters on the early history of photography. See **PHOTOGRAPHY**

D'AGUESSEAU, dá'gè'só'. See **AGUESSEAU**.

DAGUPÁN, dá'gú-pán'. A town of Luzon, Philippines, in the Province of Pangasinán, situated 8 miles from Lingayen, on the Dagupán River near the Gulf of Lingayen (Map: Luzon, C 2). It is the terminal of the Manila-Dagupán Railway. The surrounding region, generally level, is very fertile, producing cane, corn, and tobacco. Pop., 1903, 20,357.

DAHABEĀH, dá'há-bé'á (Ar. *dahabiya*, from *dahaba*, to go). The name given to barges on the river Nile, much used by tourists, by whom they are hired by the week. They resemble in their conveniences and comforts the house boats so popular on English rivers.

DAHALAK. See **DAHLAK**.

DAHL, dāh, JOHAN CHRISTIAN CLAUSEN (1788-1857). A Norwegian landscape painter. He was born at Bergen, the son of a poor fisherman, and early showed such talent for drawing that he was sent to the Copenhagen Academy, where he studied under Lorentzen. He quickly developed an original style based upon nature and the old Dutch painters, particularly Everdingen, which made him one of the pioneers of modern landscape painting. In 1818 he removed to Dresden, where he was appointed professor at the Academy in 1824. In 1826 he revisited Norway, and his landscapes, until then romantic and dreamy, became more truthful to nature. Dahl is best represented in the galleries of Christiania, Ber-

gen, and Copenhagen. One of his finest paintings, "Kronberg by Moonlight," is in Schiefer Castle near Gotha. Consult Aubert, *Maleren Professor Dahl, 1788-1857* (Christiania, 1892-94).

DAHL, VLADIMIR IVANOVICH (1801-72). A Russian lexicographer, born in Lugansk (Government of Ekaterinoslav). He was educated at the University of Dorpat and in 1828-31 accompanied the Russian army in a medical capacity in the Turkish and Polish campaigns. Subsequently he was a government official at Orenburg. Neither medicine nor his military experiences fully satisfied him; however. He therefore turned his attention to literature, coming into intimate contact with Pushkin, Krylov, Gogol, and other great Russian writers of his day. His first literary work—a number of short stories—was published in 1832. After a few years' interruption came numerous papers, books, and essays on medicine, philology, and other subjects. At the same time he wrote or edited a number of textbooks on botany, zoology, and other biological subjects. From 1849 to 1859 he held an important government post, which gave him an excellent opportunity to organize his accumulated ethnographic material and publish his results to the world. His studies in Russian ethnography and philology are valuable, in particular his *Dictionary of Existing Russian Dialects* (4 vols., 1861-68; 2d ed., 1882). His works in belles-lettres were collected at St. Petersburg in 1860-61 (8 vols.).

DAHLAK, da-lîk', or **DAHAIKAK**, dâ'hâ-lîk'. An archipelago (a dependency of Italy) just off Massawa, Abyssinia, consisting of a number of islands of coral, rock, and sand (Map. Egypt, E 4). Three only have a permanent population. The entire area is about 420 square miles, the larger portion of which is taken up by the main island, Dahlak-el-Kehir, 32 miles long and 18 wide. The chief occupation since the days of the Roman Empire has been fishing for pearls and sponges. Domestic animals are raised to some extent. The people are of mixed Nubian and Arab extraction. The permanent population is about 1500.

DAHLBERG, dâl'bërg, ERIK JOENSSON, COUNT (1625-1703). A Swedish military engineer, born in Stockholm. He served under Charles X (1656-60) as an engineer officer, took part in that monarch's famous winter march across the ice belt, and directed the engineers in the sieges of Copenhagen and Kronberg. Becoming in 1676 director of fortifications, he rebuilt most of the works then existing with such skill as to be called the "Vauban of Sweden." He was appointed a royal counselor, in 1696 Governor of Livonia, defended Riga in two sieges in 1700, and retired as field marshal in 1702. Consult H. N. Heden, *Erik Dahlberg* (Stockholm, 1900).

DAHLGREN, dâl'grën, FREDRIK AUGUST (1816-95). A Swedish poet and historian, born at Nordmark, Aug. 20, 1816. He is the author of many popular dialect songs and ballads (3 vols., 1876) and of some successful dramas, of which *Tarmiländingarne* (1846) is most noteworthy. He was also a facile translator for the theatre and wrote a history of the Swedish stage.

DAHLGREN, dâl'grën, JOHN ADOLF (1809-70). An American naval officer, prominent on the Federal side during the Civil War. He was born in Philadelphia of Swedish parentage; entered the United States navy as a midshipman in 1826; cruised for a time on the *Macedonian* and the *Ontario*; and from 1834 to 1838 was en-

gaged in the United States Coast Survey work, for which his aptitude and training in mathematical studies had well fitted him. In 1837 he was promoted to the rank of lieutenant, but in the same year was forced by failing eyesight to leave the active service and did not resume his duties until 1842. After a cruise of two years in the Mediterranean on board the *Cumberland*, he was assigned to the Ordnance Department, which absorbed the greater part of his energies from this time on, and of which he was twice chief—in 1862-63 and in 1868-70. In his many years of service he greatly increased the efficiency of the department and became especially well known through his invention (1850) of the Dahlgren gun, which proved of the utmost value to the government during the Civil War. In April, 1861, on the defection of Franklin Buchanan (q.v.), he succeeded that officer as commandant of the Washington Navy Yard, a position which he held until the fall of 1862, when he became chief of the Bureau of Ordnance. In February, 1863, he was raised to the rank of rear admiral, and in July replaced Admiral Dupont as commander in chief of the South Atlantic blockading squadron, the greater part of which was engaged in the siege of Charleston, S. C. Soon after taking command, he, in cooperation with General Gillmore, the commander of the Federal troops near Charleston, succeeded in capturing Morris Island, silencing Fort Sumter, and completing the closing of the port. Finally, in February, 1865, Charleston was evacuated by the Confederates, and Dahlgren occupied Charleston harbor, while General Schummelpennig took possession of the city. Soon afterward he resigned as commander of the South Atlantic squadron and from 1866 to 1868 commanded the South Pacific squadron. After finishing his second term as chief of the Bureau of Ordnance, he was placed in command, at his own request, of the United States Navy Yard in Washington, where several months later he died. In addition to many reports and magazine articles, he published: *Thirty-two-Pound Practice for Ranges* (1850); *Systems of Boat Armament in the United States Navy* (1852); *Naval Percussion Locks and Primers* (1852); *Ordnance Memoranda* (1853); *Shell and Shell Guns* (1856). An uncompleted volume entitled *Notes on Maritime and International Law* was published posthumously in 1877. Consult Madeleine V. Dahlgren (his widow), *Memoir of John A. Dahlgren* (Boston, 1882).

DAHLGREN, dâl'grën, KARL FREDRIK (1791-1844). A Swedish humorist and poet whose ballads and songs are widely sung. He was born near Norrköping, June 20, 1791, studied at Upsala, and was clergyman at Stockholm from 1815. Descriptions of natural scenes and the burlesque idyll are his fortes. Like Hood, whom in many ways he resembled, he published for some years an annual, *The Muses' Almanac*, as a receptacle for his stories and comic sketches. His sole novel, *Nahum Fredrik Bergstroms kronika* (1831), is excellent. He died at Stockholm, May 2, 1844.

DAHLGREN, dâl'grën, MADELEINE VINTON (1835-98). An American author, wife of Admiral J. A. Dahlgren, born in Gallipolis, Ohio. Under the name of Corinne, and later that of Cornelia, she wrote many sketches and poems. A list of her works includes the following: *Idealities* (1859); *South Sea Sketches* (1881); *Etiquette of Social Life in Washington* (1873; 5th

ed., 1881); *South Mountain Magic* (1882); *The Lost Name* (1886); *Lights and Shadows of a Life* (1887); *Divorced* (1887); *Chim* (1892). She also rendered from the Spanish Donoso Cortés's *Catholicism, Liberalism, and Socialism*, and from the French the *Pius IX* of Montalembert and the *Executive Power* of De Chambrun (1874), with a preface by James A. Garfield. She also wrote a memoir of her husband.

DAHLGREN GUN. The type of gun designed by Admiral Dahlgren after a series of experiments to determine the pressures at different parts of the bore. They were introduced into the navy in 1852 and were in general use during the Civil War, but are now obsolete. See BALLISTICS; GUNS, NAVAL; ORDNANCE.

DAHLIA, dāl'yā or dāl'yā (Neo-Lat.). A genus of large perennial herbaceous plants of the family Compositae, natives of Mexico. Most of the varieties in cultivation are derived from the species *Dahlia variabilis* and *Dahlia yarezei*, the latter being the parent of the cactus forms. Dahlias were first brought to Madrid by Spanish botanists in 1789. The name was given in honor of Dahl, a Swedish botanist. The dahlia varies greatly under cultivation. Some 3000 varieties have been catalogued. Most of these have been the showy and fancy kinds with spherical, symmetrical flowers differing mainly in color. The cactus or decorative types are more chrysanthemum-like in form. Their introduction within recent years has done much to increase the popularity of the dahlia. The dahlia possesses a wide range of colors and lacks practically only sky-blue and kindred shades. It is propagated by division of the root, cuttings, and seed. The first method is that usually employed by the amateur, the second that of the commercial grower, and the last is used chiefly in the production of new varieties. Interesting color effects can be secured by starting seedlings indoors and transplanting to the open when the weather is settled. In gardens the roots are planted 18 to 36 inches apart in any good soil and require ordinary cultivation, which should be frequent, but not more than 1 or 2 inches deep when the plants come into bloom. If the roots are set on their sides about 8 inches deep, covered at first with only 2 or 3 inches of soil, and the shoots pinched back when two or three sets of leaves have formed, the plants will branch below the surface of the ground and will be well braced against wind storms by the time they are ready to bloom. In the fall the roots are dug and stored in the cellar like potatoes.

A beetle injurious to dahlias (*Diabrotica 12-punctata*) is illustrated under CORN INSECTS.

DAHLMANN, dāl'mān, FRIEDRICH CHRISTOPH (1785-1860). A German historian and statesman, born May 13, 1785, at Wismar. His earlier studies in Copenhagen and Halle were devoted to archaeology and philology, but his attention was subsequently directed to political science and history. In 1812 he was made a professor in the University of Kiel, and in 1816 became secretary of the permanent committee of the Schleswig-Holstein clergy and nobility, in which capacity he opposed the Danish policy concerning those duchies. He published several historical works, and in 1829 was appointed professor of political science in Göttingen, where he published his valuable work, *Quellenkunde der deutschen Geschichte* (1st ed., 1830; reëdited by Weitz, 1875, and subsequent editions). Dismissed from the university in 1837, with six of

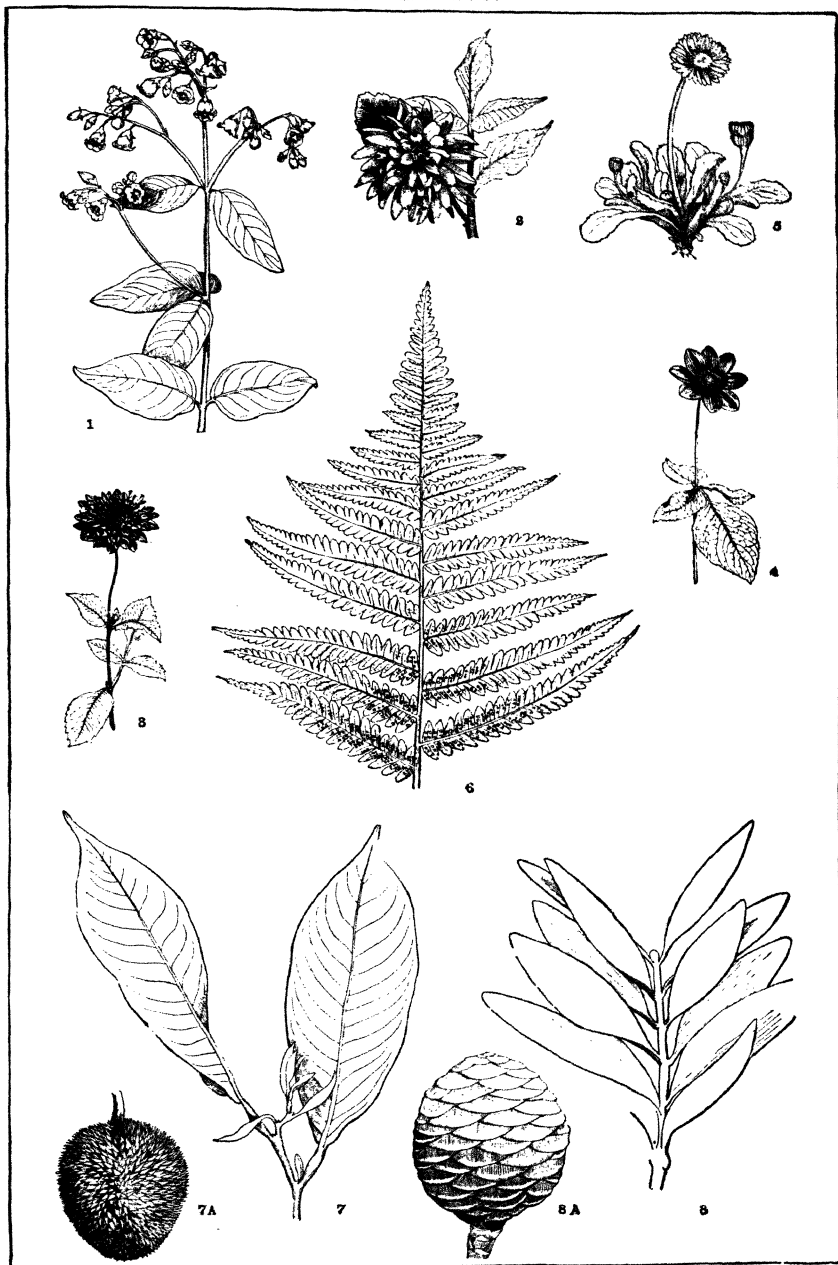
his colleagues, by King Ernest Augustus, on account of their protest against the abrogation of the Hanoverian constitution, he went to Leipzig and afterward to Jena, where he wrote his admirable *Geschichte von Dänemark* (Hamburg, 1840-43). In 1842 he became professor of history and political science at Bonn, and later on took a prominent part in the political affairs of Germany. At the outbreak of the revolution, in 1848, he was appointed deputy of Prussia in the German Diet, and was the principal member of the committee appointed to draft a new German constitution. He exerted his influence in the Frankfort Parliament in favor of an hereditary German empire, the dignity to inhere in the King of Prussia, but his views were not accepted, either by King Frederick William IV or the majority of the Parliament. After a less conspicuous parliamentary activity at Erfurt and Berlin, Dahlmann returned to his academic duties, to which he devoted himself till his death, Dec. 5, 1860. Besides the works mentioned above, he was the author of important histories of the English and French revolutions, of a work in two volumes on early Germanic history, and the editor of the *Ditmarsh Chronicle*. Consult: Springer, *F. C. Dahlmann* (Leipzig, 1870-72); Nasse, *F. C. Dahlmann*, an inaugural lecture (Kiel, 1885).

DAHLONEGA, dāl'ō-nē'gā. A town and the county seat of Lumpkin Co., Ga., about 60 miles (direct) north-northeast of Atlanta (Map: Georgia, C 1). It is situated among the foothills of the southern portion of the Blue Ridge Mountains in a gold-mining region and has gold mills. Until the Civil War a United States branch mint was situated here. Dahlonega is the seat of the North Georgia Agricultural College, a department of the State University. The Cherokee Indians called the place Dah-lo-ne-ga, meaning "yellow money." Settled in 1831, it was incorporated in the following year and is governed by a mayor and a city council. Pop., 1890, 896; 1900, 1255; 1910, 829.

DAHLSTIERNA, dāl-shēr'nā, GUNNO EURELIUS (1661-1709). A Swedish poet, born at Ohr, Sept. 7, 1661. He was an intense patriot and beguiled the tedium of surveying expeditions in Sweden, Livonia, and Pomerania by composing songs that are at times the best of his epoch, and again nearly the worst in their pathetic puerility. He had the misfortune to choose bad models, the Silesian poets of the school of Lohenstein and the Italians of the school of Marini. But their florid pomposity could not always smother his true poetic fire, and his "Elegy on the Death of Charles XI" (1697) (*Kunga Skald*) is sometimes sublime, while his "Goth's Battle Song" (1701) is an admirable popular ballad, an exulting defiance of the Russians, whose triumph at Poltava Dahlstierna could not survive. He was a man of varied gifts, distinguished as a cartographer and as the author of a number of scientific papers. He died in Pomerania, Sept. 7, 1709.

DAHN, dān, FELIX (1834-1912). An historian, jurist, and novelist. He was born in Hamburg, Feb. 9, 1834. His parents were celebrated actors, his early training was classic. He studied history and law in Munich and Berlin, became privatdozent in Munich in 1857 and professor of law there in 1862. He afterward occupied the same position in Würzburg (1863), Königsberg (1872), and Breslau (from 1888). To history he contributed *Die Könige der Germanen* (9

DAHLIA ETC.



1. DOGBANE (*Apocynum androsaemifolium*).
 2. CACTUS DAHLIA (*Dahlia juarezii*).
 3. SHOW DAHLIA (*Dahlia* sp.).
 4. SINGLE DAHLIA (*Dahlia* sp.).

5. MALE FERN (*Aspidium Filix-mas*). Tip of frond showing a portion of the sori.
 7. DURIAN LEAVES (*Durio zibethinus*).
 7A. DURIAN FRUIT, much reduced.

vols., 1861-1902), *Urgeschichte der germanischen und romanischen Völker*, 4 vols. (1881-90), and many other works; to jurisprudence, *Das Kriegerrecht* (1870); *Handelsrechtliche Vorträge* (1875); *deutsches Privatrecht* (1878); *Die Vernunft im Recht* (1879); *Die Landnot der Germanen* (1889); to poetry, several collections of ballads and lyrics. He also wrote several dramas, of which *Markgraf Rudeger van Bechelaren* (1875) is typical, as also the comedy, *Die Staatskunst der Frau'n* (1877). He also wrote some opera texts, as *Armin* (1880), composed by H. Hofmann. But Dahn is most widely known, and deservedly, for his historical novels, which deal mainly with the primitive Germanic peoples, from the Vikings of Norway to the Goths of Italy, and from prehistoric times to the Crusades. Of these there are more than 20, the chief of which are *Odhins Trost* (1880) and the longest and best of all, *Ein Kampf um Rom* (1876). This latter work has an epic breadth and an artistic unity that make it one of the most striking historical novels of recent times, but its characters are actors and its life only that of the stage. It is an epitome of the history of the German invasion of Italy, involving immense learning, borne so lightly by the author that it only now and then oppresses the reader. The period is that of Justinian and Theodora, of the Gothic kings Theodoric, Totila, Vitiges, and Teja. Through the four volumes the interest seldom flags, and the dread of impending fate increases to the tragic close. Much of Dahn's later work was not carefully done. There are also many shorter stories of the Migrations, *Felicitas* (1883), *Fredigundis* (1885), *Attila* (1888), and *Stilicho* (1900). Later publications are *Sigvald und Sigridh* (1898), *Herzog Ernst von Schwaben* (1902), and *Die Germanen* (1905). Dahn's complete literary works appeared in 21 vols. (1898-99, continued in 1903 et seq.).

DAHOMÉY, da-hō'mī or dā'hō'mā'. Formerly a negro kingdom, now one of the colonies of French West Africa. With a coast line of about 75 miles on the Gulf of Guinea, the colony (which extends much farther north than the old kingdom) is bounded on the north by the colony of Upper Senegal and Niger (French) and the Military Territory of the Niger (French), on the east by Nigeria (British), and on the west by Togo (German): the Niger River forms the boundary between the Military Territory and Dahomey (Map Africa, E 4). In 1907 the circles of Fada N'Gurma and Say were, for ethnical reasons, incorporated with Upper Senegal and Niger, from which they had previously been detached: so that the area of Dahomey, as now estimated, is 107,000 square kilometers (41,313 square miles). The population in 1911 was estimated at 902,000. The terms "Upper Dahomey" and "Lower Dahomey" are often used, indicating the territories lying north and south respectively of 10° N. The littoral, which is part of the old Slave Coast, is low and sandy and contains a series of lagoons. The country for about 50 miles inland is flat and covered with dense vegetation. There is then a gradual rise to about 1300 feet near the 10th parallel. South of this line the watercourses flow south: north of it, mostly to the northeast. Upper Dahomey is hilly, but the highest point is only about 2600 feet; this is in the Atacora hills of the northwest, which form a watershed between the basins of the Niger, the Weme, and the Volta. The Weme, about 280 miles long, is the most im-

portant river within the colony. The climate is unhealthful in the coast lands, being moist, foggy, and hot (average temperature about 80° F., though the highest temperatures rarely exceed 95° F.). In the interior the climate is more favorable. The wet season is from May to November.

The forests contain baobab trees and coconut and oil palms. The soil is generally fertile, though waste districts occur in Upper Dahomey. Palm oil is the leading product, but corn, sweet potatoes, manioc, yams, plantains and other fruits, etc., are cultivated. Some cotton is produced. Fishing is important in the lagoons, and there is some native weaving and pottery making. Trade, which formerly was little more than an exchange of trinkets for gold and other valuable articles, has assumed a modern aspect and importance. The chief ports are Porto Novo, Kotonu, and Whydah. In 1910 imports were valued at 17,838,853 francs, and exports at 17,886,254 francs. In 1911, 19,524,531 and 21,958,301. In the latter year the importation of cotton tissues amounted to nearly 6,000,000 francs, and of alcoholic liquors to 2,250,000 francs (in 1914 the government undertook to reduce the consumption of alcohol, which was working much harm among the natives). Principal exports in 1911: palm kernels, 12,577,000 francs, palm oil, 8,088,000; dried fish, 441,000. About one-fourth of the trade is with France, the rest mainly with the United Kingdom and Germany.

A railway (begun in 1900) is under construction from Kotonu to the Niger River, 429 miles distant. A branch (20 miles long) passes through Whydah to Segboreu. Another line (about 25 miles) opens up the well-cultivated district between Porto Novo and Sakete. Kotonu is connected by telegraph with Porto Novo, Abomey (capital of the old kingdom), and other towns of the colony and with the French territories to the north, there being through telegraphic communication to Senegal. By cable Kotonu is connected with Lagos, Grand Bassam, and Libreville. At Kotonu, also, is a wireless-telegraph station. There is regular steamship communication with Europe.

Dahomey was an absolute monarchy previous to the French occupation. There was a standing army estimated at over 15,000, consisting partly of female warriors or amazons, who were distinguished for superior physique and high skill in the use of weapons. At present the colony, which is an integral part of the governor-generalship of French West Africa, is administered by a lieutenant governor, assisted by a council of three officials and three prominent residents. The seat of the lieutenant governor is Porto Novo. The natives are full-blooded Guinea Negroes, or Nigritians of the coast (Deniker). The Dahomans are tall, very long-headed (index 75.1), but not so black as the tribes of Senegal. In their own tongue, a dialect of the Ewe language, common on this part of the Slave Coast, they are called Fon or Fawin. Their religion is purely fetish, and the sacrifice of human beings, a widespread custom in former times, is still supposed to be practiced. In spite of a low standard of morality and warlike attributes and usages, the Dahomans are polite in their intercourse. The activity of missionaries has thus far been attended with little success, except in the case of the dervishes, who are indefatigable in their efforts to spread the gospel of Islam. The population of Dahomey

was estimated in 1911 at 902,000. Whites number less than 500. Porto Novo had about 40,000 inhabitants; Whydah, 13,000; Abomey, 10,730; Grand Popo and Kotonu, 2000 each.

The kingdom of Dahomey arose in the seventeenth century around the city of Abomey as a nucleus. By successive conquests the kings extended their rule to the highlands of the Mahé on the north and to the Slave Coast on the south (1772). There they came into contact with the Europeans and succeeded in obtaining control of a large part of the slave trade, which was then carried on actively by the English, the French, and Portuguese. With the cessation of the slave traffic the prosperity of the country came to an end. France secured a firm footing on the coast in the second half of the nineteenth century. Between 1878 and 1885 it obtained possession of Kotonu, Porto Novo, and Grand Popo, and after a bloody contest in 1890 forced King Behanzin to acknowledge its title to the coast region. War broke out again in 1892 and resulted in the taking of Abomey, the deposition of Behanzin (since retained as prisoner at Fort-de-France, Martinique), and the establishment of a virtual French protectorate. Since then the French have been actively engaged in extending their authority over the region to the north, so as to bring Dahomey into touch with their possessions in the Sudan. In 1897 and 1898 they concluded treaties with the Germans and the English, and the sphere of influence claimed by each was determined. The boundary question settled, the French government busied itself with Gallicizing the native population. In 1902 compulsory education for all in the French language was inaugurated, and in a dozen different ways the paternal government undertook to win over the natives. Negro doctors educated in Paris dispensed free medical advice, and an elaborate system of medals and decorations was invented to show the rewards of virtue and patriotism. The second decade of the twentieth century has been marked by the beginnings of extensive railroad construction.

Consult. Careh, *Les territoires africains et les conventions anglaises* (Paris, 1901); Toutée, *Du Dahomé au Sahara* (ib. 1899); Keane, in *Stanford's Africa* (London, 1895); Verdier, *Trente-cinq années de lutte aux colonies, côte occidentale d'Afrique* (Paris, 1897); François, *Notre colonie du Dahomey* (ib., 1906); Le Herissé, *L'Ancien royaume du Dahomey* (ib., 1911).

DAIBUTSU, dī'bōō'tsōō (Jap., great Buddha). A famous Japanese image of Buddha at Kamakura, near Yokohama. It dates from 1252 and is a unique production of Japanese art, wrought of bronze and silver, with eyes of gold, and measures 50 feet in height and 97 feet in circumference. More ancient, even, dating from 749, and of more gigantic proportions, but of inferior artistic merit, is the Daibutsu at Nara, in the main island of Japan.

DAIGUEBELLE, dā'gē'bēl'. See AIGUEBELLE.

DAILLÉ, dā'yā', or **DALLÉUS**, dāl-lē'ūs, JEAN (1594-1670). A French Reformed theologian, born at Châtelleraut. He was tutor to the grandsons of Philippe de Mornay and traveled with them through Italy, Germany, Holland, and England in 1612-21. He was ordained in 1623, became preacher at Saumur in 1625 and at Charenton in 1626, and was president of the last national synod of the Reformed church held in France in 1659. He held the modified

predestinarianism of Amyraut (q.v.) and wrote a considerable number of controversial works, among which the *Traité de l'emploi des Saints Pères* (1623) is of permanent value.

DAILY COURANT, THE. A journal called the first English daily newspaper, which first appeared March 11, 1702.

DAIMIEL, dī-myāl'. A town in Spain, in the Province of Ciudad Real, 20 miles east-northeast of the city of that name, with which it is connected by rail (Map: Spain, D 3). It lies on the Auer River, in the fertile Campo de Calatrava; it has several squares, and its principal streets, though unpaved, are wide and comparatively clean. Its chief buildings are the churches of San Pedro and Santa María—the former a Doric and the latter a Gothic structure—a town hall, and a hospital. One of the most important towns in the La Mancha district, Daimiel has manufactures of woolens, linens, bricks, liquors, soap, hats, etc. Pop., 1900, 11,825; 1910, 15,940.

DAIMYO, dī'mē-ō (Jap., great name). A term applied in Japan to a territorial feudal lord, in contrast with the *kuge*, or landless noble of the Imperial court. There were two classes of *daimyos*, *fudai-daimyo*, and *tozama-daimyo*. The *daimyos* of the former class were the kin of the *shogun's* house and were naturally given special favors and privileges, while those of the latter class, who were not the *shogun's* relatives, not infrequently were suspected as rebellious. From the decay of the Mikado's power in the twelfth century this class, numbering nearly 350, flourished until the abolition of feudalism in 1868, when they were amalgamated with the *kuge*, the two forming the Kwazoku, or flowery nobility. According to their former rank, wealth, power, historical or personal importance, the individual *daimyos* have become princes, marquises, counts, viscounts, and barons. Consult Dickson, *Sketch of the History and Government of Japan* (London, 1869); Griffiths, *The Mikado's Empire* (New York, 1900); *The Japanese Nation in Evolution* (ib., 1907); Lloyd, *Every-day Japan* (London, New York, Toronto, and Melbourne, 1909).

DAINGERFIELD, ELLIOTT (1859-). An American historical and landscape painter. He was born at Harper's Ferry, Va., studied at the Art Students' League, New York, and first exhibited at the National Academy in 1880. In 1897 he visited Europe for purposes of study and later was appointed professor at the School of Design in Philadelphia. Among his religious subjects, the rich and glowing color of which is reminiscent of the Italian masters of the sixteenth century, are the pictures in Lady Chapel, St. Mary the Virgin, New York, a "Madonna and Child," "The Child of Mary," and "The Story of the Madonna," awarded a prize in 1902. He is also important as a landscape painter in such works as "Slumbering Fog" (Metropolitan Museum), "The Midnight Moon" (Brooklyn Museum), and "Pearls of the Morning." He was elected to the National Academy of Design in 1906.

DAIR/CELL. An Irish saint of the seventh century, the illegitimate son of a farmer at Luachair (near Castleisland, Kerry). He was born in the wilderness and would have been killed at birth by his mother, had not a dove descended from heaven to protect him, or "gather him to her in her wings"; whence his name *Daircell*, meaning "a gathering."

DAIREN. See DALNY.

DAIRYING (ME. *deyery*, from *doye*, dairy-maid, Icel. *deigja*; probably connected with OSwed. *daggja*, to suckle, Skt. *duh*, to milk). That branch of agriculture which has to do with the production and utilization of milk. It embraces the feeding and management of milch cows, the supplying of cream and milk, and the making of butter, cheese, etc. The term *dairy husbandry* is applied to a system of farming under which cows are kept and bred, and the principal crops grown with special reference to the dairy herd. *Dairy* was formerly used to designate the place or house where the milk was kept, cheese was made, etc. Like almost all other occupations, dairying has become in recent years divided into several distinct and special lines. These differ as to the form of the product and the manner of disposing of it. In one case milk or cream may be produced for delivery to consumers direct from the dairy, or the same product may be delivered to a creamery to be manufactured into butter and cheese, or the product of the herd may be converted into butter and cheese at home.

In no branch of agriculture has greater progress been made in recent years than in dairying, and it is now regarded as among the most progressive and highly developed forms of farming in the United States. While formerly believed to be confined by natural conditions to a limited area, known as the "dairy belt," it has been shown that the industry can be profitably and successfully carried on over a wide range of country, and that, generally speaking, good butter and cheese can be made by proper management in almost all parts of North America. Dairying was formerly confined to the spring and summer months, when pasturage could be had for the cows, and it was planned to have the cows calve as far as possible in the spring; they were generally allowed to go dry during the fall and early winter, and were neither well fed nor well housed through the winter. Winter dairying was practically unknown, as it was not supposed to be feasible or profitable. Under the system at present followed, dairying is not confined to any season, and the cows are fed succulent fodder during the winter in the form of corn silage, and roots, in addition to hay and liberal grain rations, composed largely of bran, cornmeal, and the by-products of factories where glucose and similar products are made. Great stress is laid upon the value of succulent foods as supplements to dry feed in winter, and in all countries where dairying has attained a high degree of development succulent feeds have occupied a prominent place in the ration given throughout the year. Corn silage is extensively relied upon for this purpose in the United States, being the cheapest food which can be supplied over a wide extent of the country. There may now be said to be two general systems of summer-feeding cows, the pasturage system and the "soiling" system, in which latter the green crops are cut for the animals. Pasturage is still extensively practiced where practicable, and it is quite customary to feed some grain to good cows on pasture. A large number of cows in the eastern part of the United States are now "kept up" during summer, such green feed as comes into condition in succession throughout the season being raised for them. This method is thought to be more economical in sections where land commands a high price. A much larger number of cows can be kept on a given area by this "soiling" system,

and the animals are found to keep healthy and do well under it. Perhaps the most remarkable advance in dairying has been in the keeping of better cows and in giving more attention to their feeding, comfort, and general management. The introduction of the creamery and cheese-factory (qq.v.) systems has caused a great revolution in dairy practice, to a large extent transferring the manufacture of butter and cheese from the farm to the factory. The invention of the Babcock test, which has made practicable the payment for milk by test and placed it within the power of dairymen to test their individual cows, has been a very potent factor in improving the grade of cows which are kept and has probably done more than any other single thing to advance American dairying. Milk of guaranteed fat-content is now sold in most of the large cities, and cream is supplied of various degrees of richness, according to the purposes for which it is intended. The sanitary conditions of milk production have been greatly improved as a result of bacteriological and other studies which have been made, and pasteurized milk and cream are now extensively used.

Dairying has been very greatly advanced by the invention and introduction of various kinds of dairy machinery, such as creaming apparatus, notably the separator; hand and power churns, butterworkers, cheese vats and presses, etc. The cream separator, aside from its increased efficiency and reduction of labor, has almost eliminated the disturbing factor of climate from a large part of dairy management and has altogether worked a revolution in this industry. See BUTTER.

The numerous by-products of the dairy are now very generally utilized in a variety of ways. The skim milk and buttermilk are, where practicable, fed to animals. considerable quantities are sold in towns and cities for household consumption, and milk sugar is made from skim milk and whey. The casein of skim milk is also dried and prepared as a bakers' supply and substitute for eggs, as the basis of an enamel paint, as a substitute for glue in paper sizing, and is also solidified and used for making buttons, combs, and many similar articles.

The value of the principal dairy products of the United States (milk, butter, and cheese) was estimated by the thirteenth census (1909) at \$596,413,463.

The leading dairy States are New York, Wisconsin, Pennsylvania, Illinois, Iowa, Ohio, Minnesota, Michigan, Indiana, Missouri, and Kansas. In the Middle and Eastern States the milk is used quite largely to supply the numerous large towns and cities. In the Central West and Northwest butter is the principal dairy product. The United States is far in the lead of all foreign countries in the extent of its stock-raising interests and the value of its dairy products. Dairying is also quite extensively practiced in Canada, where both butter and cheese of good quality are made. Canadian cheese, especially, enjoys an excellent reputation. Denmark has long been famous as a dairy country, having an unusually large number of cows in proportion to its inhabitants. The farms are small and numerous, and most of the butter is made in creameries. In 1902 that country, which is only about one-third the size of New York, exported 193,061,998 pounds of butter. Dairying is also extensively practiced in Australia and of late years has greatly developed in Russia.

For further discussion of topics relating to dairying, see **CATTLE**, *Dairy Cattle*; **BUTTER MAKING**; **CHEESE MAKING**; **MILK PRODUCTION**; **CHEESE FACTORY**; **CREAMERY**.

Consult: Gurler, *American Dairying*; Lane, *The Business of Dairying*; Wing, *Milk and its Products*; Eckles, *Dairy Cattle and Milk Production*.

DAIS (Fr., canopy). This term was used with considerable latitude by mediaeval writers. Its most usual significations are the following: 1. A canopy over an altar, shrine, font, throne, stall, chair, statue, or the like. The term was applied to the canopy without regard to the materials of which it was composed, which might be cloth, wood, stone, metal, or other substance. 2. The chief seat at the high table in a hall, with the canopy which covered it, from which probably the word in all its significations was introduced, its French meaning being a "canopy." 3. The high table itself. 4. The raised portion of the floor, or *estrade*, on which the high table stood, and by which the upper was divided from the lower portion of the hall. 5. A cloth of state for covering a throne or table. In old writings the word occasionally takes the form of *dois*, and more rarely that of *dez* or *dets*.

DAISY (AS. *dages*, *éage*, day's eye, referring to the form of the flower). A plant of the genus *Bellis*, of the family Compositae. The common daisy (*Bellis perennis*), plentiful throughout Europe, flowers almost all the year in pastures, meadows, and grassy places. (For illustration, see Plate of **DAHLIA**, ETC.) What are called double varieties, with flowers of various and often brilliant colors, are very commonly cultivated in gardens. One variety has the flower (head of flowers) surrounded by smaller ones, the short stems of which grow from the summit of the scape or leafless stem. The daisy (*gowan* of the Scotch) has long been a favorite with poets and lovers of nature, characteristic as it is of many of the fairest summer scenes, its blossoms gemming the pastures, and recommended also by its frequent appearance during the severer seasons of the year. Its flowers close at night. It is sparingly introduced in America. A species of *Bellis* is, however, found in the United States (*Bellis integrifolia*), but it is confined to Kentucky, Tennessee, Arkansas, and the Southwestern States. The flower commonly called daisy, or oxeye daisy, in the United States is a species of chrysanthemum (*Chrysanthemum leucanthemum*). A number of other plants are called daisies in the United States, among them *Rudbeckia hirta*, also called yellow daisy and black-eyed susan. *Erigeron annuus*, *Erigeron ramosus*, and other species are called daisies or daisy fleabane, and a number of species of wild aster are likewise known as daisies.

DAISY MILLER. A well-known novel by Henry James (1878), so called from the name of its heroine, an American girl who disregarded European rules of conduct. This character sketch was much criticized as not being a true representation of the American type, but its veracity is now admitted.

DAITYA, *dī'tyā* (Skt., sons of *Diti*, a popular formation from *Aditi*, the boundless goddess). The Titans of Hindu mythology, hostile to the gods and disturbers of religious observances.

DAKAR, *dā-kār'*. A fortified seaport in the French colony of Senegal, Africa, situated on the Gulf of Gorée at the extreme point of Cape

Verde (Map: Africa, C 3). It has an excellent harbor, finished in 1908, and is the terminal of the railway to St. Louis, 163 miles distant. The climate is unhealthy. There are four big docks, and an arsenal with a torpedo-boat basin. It is the chief port of call in the West African trade with South America. Pop., 1910, 24,914.

DA'KER HEN (dialectic Eng. and Scottish *daker*, to luter; cf. OFlem. *dackeren*, to move to and fro). An English local name for a corn crane. See **CHRAKE**.

DAKOTA. See **NORTH DAKOTA**; **SOUTH DAKOTA**.

DAKOTA INDIANS. See **SIOUX**.

DAKOTA RIVER. A river of North and South Dakota, more commonly called the James River (q.v.).

DAKOTA STAGE. A subdivision of the Cretaceous system in America, the rocks of which were first described as occurring in Dakota. It comprises conglomerates, sandstones, and clays, with layers of lignite, and is found along the western edge of the great plains from Texas to Canada. In the Black Hills the series of rocks is from 250 feet to 400 feet thick. The sandstone, which is the main element in the formation, has considerable importance in the plains region on account of its affording artesian waters. The supply of water comes from the mountain regions where the beds are upturned and then flows down along the dip of the latter under the plains, coming to the surface under its own pressure when tapped by wells. See **CRETACEOUS SYSTEM**.

DAKOTA WESLEYAN UNIVERSITY. An institution for higher education, under the auspices of the Methodist Episcopal church, founded at Mitchell, S. Dak., in 1883. The university consists of a College of Liberal Arts, and schools of education, commerce, elocution, and art. There is also a preparatory academy in connection with the university. The total enrollment in all departments in 1913 was 407. Of these, 133 were in the College of Liberal Arts, 134 in the School of Music, and 124 in the School of Commerce. The endowment of the university in 1914 was \$250,000, and the annual income about \$40,000. The library contained 40,000 volumes. The president is William Grant Seaman, Ph.D.

DAKSHA, *dāk'shā*. A deity in Hindu mythology, represented as having a goat's head and regarded as a son of Brahma (q.v.). His name means the *dexterous* or *clever* god, and in the oldest of the Vedas he is accounted especially as a progenitor of the race of the gods. His daughter Umā, according to later mythology, was married to Siva (q.v.). Owing to an affront received in connection with a great sacrificial feast, Siva slew Daksha and cut off his head. The scene is portrayed in Hindu sculpture. Siva later restored his father-in-law to life and replaced his head, which had accidentally been destroyed, by the head of a goat, which the god still wears.

DALAGUETE, *dā'lā-gā'tā*. A town of Cebu, Philippines, 46 miles southwest of Cebu (Map: Philippine Islands, D 6). It is situated on the coast, at the mouth of the river of the same name. Dalaguete was founded in 1711. Pop., 1903, 21,354.

DALAT-LAMA, *dā-lā'tā-lā'mā*. See **LAMAISM**. **DAL'ARA'DIA**. The ancient name applied to a district in Ireland, including the southern half of the present County of Antrim and the

eastern part of the County of Down. The name is not to be confounded with Dalriada (q.v.), as Dalaradia, or "Dal Araidh," takes its name from "Fiacha Ariad," a king of Ulster of the Irian race, while Dalriada belonged to the race of Heremon. A Pictish colony from Scotland settled in Dalaradia a century before the beginning of the Christian era. Consult Skene, *Celtic Scotland* (3 vols., Edinburgh, 1876-80).

DALARNE. See DALECARLIA.

DALAYRAC, dā'la'rāk', NICOLAS (1753-1809). A French dramatic composer, born at Muret. He was a pupil of Langlé and in 1781 produced his first opera, *Le petit souper*. Its success encouraged him, and in the next 28 years he wrote no less than 61 operas, of which several became very popular. In 1798 he was made a member of the Stockholm Academy and a little later a chevalier of the Legion of Honor. He died in Paris, and his bust is now in the foyer of the Opéra Comique.

DALBERG, dāl'bérk. The name of an ancient German family, the members of which possessed under the Holy Roman Empire the dignity of "First Knight of the Empire." The most distinguished member of the family was KARL THEODOR, BARON VON DALBERG (1744-1817), Archbishop of Mainz, and famous as a clerical magnate and patron of arts and letters. He assisted in the negotiations between Napoleon and Prus VII at Paris in 1804 and was much esteemed, both personally and as a scholar and ecclesiastical prince, by such men as Wieland, Schiller, and Goethe. He was made Prince Primate of the Confederation of the Rhine (1806) and Grand Duke of Frankfurt (1810), but was constrained by public opinion to retire into private life on the fall of Napoleon (1814). His numerous writings are no longer of much value. For his *Life*, consult Krämer (Leipzig, 1821), and Beaulieu-Marconnay, *Karl von Dalberg und seine Zeit* (2 vols., 1879).

DALBERGIA, dāl-bér'jā (Neo-Lat., named in honor of the Swedish botanist *Dalberg*). A genus of trees and climbing shrubs of the family Leguminosæ, having a stalked membranous pod, which is flat, tapers to both ends, and contains one to three flat seeds. The leaves are pinnate, with a terminal leaflet. All the species, about 75 in number, are natives of warm climates. Some of them are valuable timber trees, particularly the sissou of Bengal (*Dalbergia sissou*), much prized, and more extensively used in the north of India than any other timber tree except the sal (q.v.). The sissou extends through India to Afghanistan, growing at elevations up to 5000 feet. The trees become 60 feet high, the wood is elastic, seasons well, does not warp, and has a greater transverse strength than teak or sal. *Dalbergia latifolia* furnishes the East Indian rosewood, or Malabar blackwood, which attains a diameter of 6 feet. The wood is heavy, dark, and very strong, and is extensively used in cabinetwork, for ship knees, gun carriages, and agricultural implements. *Dalbergia nigra* and *Dalbergia miscolobum* of Brazil furnish valuable woods for export. *Ecastophyllum monetaria*, a related tree, a native of Surinam, yields a resin very similar to dragon's blood. See ROSEWOOD.

D'ALBERT, dāl'bār', EUGEN FRANCIS CHARLES. See ALBERT.

DALCROZE, dāl'krōz', EMILE JACQUES (1865-). A Swiss composer and originator of a system of rhythmic training, eurythmics. He was

born of Swiss parents at Vienna, July 6, 1865, but lived in Geneva from 1873 to 1910. While pursuing the study of literature at the University of Geneva, he also attended the conservatory. Later he studied with Fuchs, Graedener, and Bruckner at the Vienna Conservatory, and also with Delibes (orchestration) in Paris. In 1892 he became professor of harmony and solfeggio at the Conservatory of Geneva. It was here that he first conceived his idea of laying special stress on rhythm. He began by insisting on his pupils beating the time with their hands. Gradually the feet and the entire body were called into play, thus coordinating the music with elaborate and graceful rhythmic movement. He had developed his ideas to a considerable extent when he succeeded in interesting the French psychologist Edouard Claparède, and together with him he elaborated a special terminology and reduced his practice to a system. When his request to have his system introduced as a regular course into the conservatory was refused, he resigned and left Geneva. At Helderau, near Dresden, he established in 1910 a special school for eurythmics, of which he was thereafter the director. The fame of this institution spread rapidly, so that within three years the system found its way into many schools of Germany, France, Russia, and England. In 1913 it was introduced into Bryn Mawr College, and two special schools were established in New York and Chicago respectively. Dalcroze's compositions show considerable inventive power and originality, but are deficient in formal structure. They include two operas, *Janie* (1893) and *Sancho Panza* (1897); *La Veillée* and *Poème Alpestre* for soli, chorus, and orchestra; a violin concerto, a string quartet and some really excellent songs.

DALE, DAVID (1739-1806). A Scottish manufacturer, born at Stewarston, Ayrshire. He secured the use of Arkwright's spinning patent, founded the New Lanark mills, and subsequently other important establishments, and became widely known for his many benevolences. Robert Owen married his daughter and succeeded him in the Lanark mills. Dale was the founder and chief pastor of a Scottish church of Congregational principles, the members of which were called Dalites, or Old Independents.

DALE, JAMES WILKINSON (1812-81). An American Presbyterian divine. He graduated in 1831 at the University of Pennsylvania and studied medicine there after studying theology at Andover and Princeton, was ordained in 1837, but had to give up his plan of being a foreign missionary, and was pastor from 1845 to 1876, with his last charge at Wayne, Pa. He died at Media, Pa. He wrote the elaborate works on baptism: *Classic* (1867), *Judaic* (1869), *Johannic* (1871), and *Christic and Patristic Baptism* (1874). For his biography, consult James Roberts (Philadelphia, 1886).

DALE, RICHARD (1756-1826). An American naval officer. At the opening of the Revolutionary War he entered the English service, but afterward joined the American navy, served under John Barry in the brig *Lexington* and later as first lieutenant under Paul Jones and gained distinction in the engagement between the *Bon Homme Richard* and the *Serapis*. He was several times taken prisoner. After the declaration of peace with England he was appointed captain and in 1801 had command of the squadron sent against Tripoli. (See BAR-

RARY POWERS, WARS WITH.) He resigned in 1802 and spent the rest of his life in retirement.

DALE, ROBERT WILLIAM (1829-95). An English Congregational minister and author. He was born in London, graduated at the University of London in 1853, and in the same year was ordained to the ministry and became pastor of Carr's Lane Chapel, Birmingham. He was chairman of the Congregational Union in 1868 and 1869, edited *The Congregationalist* for seven years, and in 1877 visited the United States to give the Lyman Beecher lectures on preaching at the Yale Divinity School. In 1891 he was president of the first International Council of Congregationalists. He was influential in municipal politics and was a member of the Birmingham school board. Among his writings are: a biography (1861) of John Angell James, copastor of Carr's Lane Chapel; *The Jewish Temple and the Christian Church* (1863); *The Atonement* (1875); *Impressions of America* (1878); *Congregational Church Polity* (1885); *The Fellowship of Christ* (1891); and a *History of English Congregationalism*, completed by his son (1907).

DALE, SIR THOMAS (†-1619). A Colonial governor of Virginia. He served for some time as an English officer in the Netherlands and in 1606 was knighted by King James. In 1611 he was sent to Virginia, by the London Company, with supplies, and, in the absence of Lord de la Warr (q.v.), the Governor-General, assumed control of the government, acting as Deputy Governor from May till August of this year. He was nominally relieved in August of this year by Sir Thomas Gates, but nevertheless remained the leading spirit of the Colony, holding the position of High Marshal, and from 1614 to 1616 was again in full control. He returned to England in 1616, was put in command of a fleet sent out by the East India Company against the Dutch in 1618, defeated a Dutch fleet off the site of the present Batavia in November of this year, and in 1619 died at Masulipatam, India. His administration in Virginia was remarkable for its pitiless severity. Finding the colonists dejected, listless, and disinclined to work, he placed them under martial law and republished a code which is always known as "Dale's Code," whose rigor has become proverbial. The years 1611-16 were long known among the colonists as "the five years of slavery." Dale founded a new settlement at Henrico and also Bermuda Hundred, overcame the Appomattox Indians, and by apportioning some of the lands among private individuals took the first step towards abolishing the pernicious communal system. His settlement at Henrico practically saved the Colony from destruction; for he thereby secured a more healthful location, thus preventing disease, and also a place comparatively safe from Indian attack, thus enabling the colonists to raise a supply of corn. His administration of affairs was approved by the London Company, and Sir Edwin Sandys (q.v.), one of the most influential members, said in 1619 that "Dale . . . with great and constant severity reclamation almost miraculously those idle and disordered people, and reduced them to labor and an honest fashion of life." Much information concerning Dale and his administration is given in Brown, *The Genesis of the United States* (Boston, 1890), and *The First Republic in America* (ib., 1898). A copy of "Dale's Laws" may be found in Force, *Tracts and Other Papers Relating to the Colonies in*

America, vol. iii (Washington, 1836-46). Consult also Prince, "The First Criminal Code of Virginia," in the *Report of the American Historical Association for 1899* (Washington, 1900); Bruce, *Economic History of Virginia*, vol. i (New York, 1907).

DALE, THOMAS NELSON (1845-). An American geologist, born in New York City. He joined (1885) the United States Geological Survey, of which he became geologist in 1892. From 1893 to 1901 he was instructor in geology and botany at Williams College. He is author of *The Scientific Spirit Applied to Living Subjects* (1913), and also of the following bulletins of the United States Geological Survey: *Structural Details in the Green Mountain Region and in Eastern New York* (1902); *Geology of the Hudson Valley* (1904); *The Granites of Maine* (1907); *The Chief Commercial Granites of Massachusetts, New Hampshire, and Rhode Island* (1908); *The Commercial Granites of Vermont* (1909); *The Granites of Connecticut* (1911); *The Commercial Marbles of Western Vermont* (1912).

DALECARLIA, däl'e-kär'li-ä, or **DALARNE**, däl'lär-ne. An old province of Sweden, now forming the Län of Kopparberg or Falun. The Dalecarlians are celebrated for the part they took under Gustavus Vasa in freeing their country from the yoke of Christian II of Denmark in 1519-23.

Besides the peasants who till the soil, there is a large number who are engaged in industrial occupations, especially in the manufacture of wood pulp and different steel trades due to the existence of extensive forests and iron mines in this region.

D'ALEMBERT, däl'än'bär' (1717-83). The assumed name of Jean le Rond, a French mathematician, philosopher, and encyclopedist. He was the natural son of Chevalier Destouches and Madame de Tencin and was left as an infant on the steps of the chapel of St. Jean le Rond, from which he received his name. He was tenderly reared by a glazier's wife, his father contributing secretly to his support, and was educated by Jansenists at the Collège Mazarin, where he showed a brilliant promise in mathematics, physics, and astronomy, to which he reverted after essaying law and medicine. At 22 he published a scholarly *Mémoire sur le calcul intégral*; at 24 another, *Sur la réfraction des corps solides*. His *Traité de dynamique* (1743) marks an epoch in mechanical philosophy. This work is based on the theory known as D'Alembert's principle, discovered by him at the age of 26 and expressed in the proposition: The impressed forces are equivalent to the effective force. His *Réflexions sur la cause générale des vents* (1746) contains the first conception of the calculus of partial differences. In 1749 he published the first analytical solution of the precession of the equinoxes. He was made a member of the Academy of Sciences in 1741, and in 1754 of the French Academy, whose perpetual secretary he became in 1772. As such he wrote a series of *Eloges* of members deceased between 1770 and 1772. In 1751 he undertook, with Diderot, the editing of the great French *Encyclopédie*, and, though he withdrew from the editorship in 1758, because of government interference with the publication, he continued to contribute articles in science and philosophy. Very noteworthy is his preliminary discourse, or general introduction, to the work, in which he traces in broad outlines the evolution

of human society, civilization, science, and art. An article of his on Geneva involved him in a celebrated dispute with Rousseau on the merits of Calvinism and the stage as teachers of morals. Meantime his scientific work had attracted the attention of Frederick II, who repeatedly offered him the presidency of the Berlin Academy. Catharine II of Russia offered him (1762) 100,000 francs a year as tutor to her son. This he also declined. David Hume left him a legacy of £200, and on the recommendation of Pope Benedict XIV he was admitted to membership in the Institute of Bologna (1755). But he continued to live simply, being by nature a plain, independent, bluff, benevolent, though sometimes rude man. He was a total abstainer from alcohol. His last years are closely associated with the name of Mlle. de l'Espinasse (q.v.), whom he learned to admire at the literary salon of Mme. du Deffand (q.v.). She nursed him during a serious illness in 1765, and they were never after separated, though not a breath of scandal attached to their connection till her death (1776), a shock from which he never recovered. D'Alembert is fully as important for his personality as for his works. While he ranks among the first geometers of his century, he was not so highly esteemed in literature and philosophy, though his works abound in ingenious and often profound thoughts, and his style is always clear and firm. He gave learning an official status in French society and did a great service to letters, both by his example and by his *Essai sur les gens de lettres* (1753), in fostering the independence of his class from subservience to social prominence and political power. This essay exposed thoroughly and finally the evils of patronage. His religious opinions, once the subject of eager controversy, are revealed as a tolerant theism in his correspondence with Voltaire, published in Bossange's partial edition of *D'Alembert's Works* (1821). Condorcet's *Eloge* of him before the French Academy (1784) gives a judicious account of D'Alembert's life and writings. Consult Bertrand, *D'Alembert* (Paris, 1889), and Tallentyre, "D'Alembert. The Thinker," in *his The Friends of Voltaire* (London, 1906).

DALÉN, dāl'ēn, (NILS) GUSTAF (1869-). A Swedish engineer and expert on gas lighting. He was born in Stenstorp and was educated at the Gothenburg Engineering Institute and the Zurich Polytechnicum. An eminent consulting engineer, he was employed by the Swedish Carbide and Acetone Company (1905) and then by the Swedish Gas-Accumulator Company. He invented a method for dissolving acetylene in acetone which is used for automatic lighting in unmanned lighthouses and for railway signals; and he improved hot-air turbines, air compressors, and milking machines. In 1912 he received the Nobel prize in physics and in 1913 was elected to the Royal Swedish Academy of Science. He wrote technical papers and a book, *Chemische Technologie des Papiers* (1911).

DALGÄRNO, GÖRGE (c.1626-87). A Scottish writer, who interested himself in the subject of a universal language and in the methods of teaching the deaf and dumb. He was born at Aberdeen, studied at Marischal College, and afterward kept a school in Oxford for 30 years. His *Ars Signorum, Vulgo Character Universalis et Lingua Philosophica* (1661) is an attempt to represent and classify ideas by specific arbitrary characters irrespective of words. His *Didascaloprophus, or the Deaf and Dumb Man's Tutor*

(1680) was designed "to bring the way of teaching the deaf man to read and write as near as possible to that of teaching young ones to speak; and understand their mother tongue."

DALHART. A city in Hartley and Dallam counties, Tex., and the county seat of the latter, 280 miles west of Oklahoma City, Okla., on the Fort Worth and Denver and the Chicago, Rock Island, and Gulf railroads (Map: Texas, A 1). It contains machine shops of the Rock Island system and has cattle, sheep, and horse-raising interests. Dalhart was incorporated in 1901. Pop., 1910, 2580.

DALHOUSIE, dāl-hōo'zī or dāl-hou'zī. A popular summer resort and port of entry, the capital of Restigouche Co., New Brunswick, Canada (Map. New Brunswick, C 1). It is situated on the Intercolonial Railway, at the mouth of the Restigouche estuary on Chaleurs Bay, and has a large and well-protected harbor. Steamship connection with points along the coast is maintained. Good fishing and hunting abound. Among the manufacturing industries are lumber and shingle mills. There is a good trade in fresh and frozen fish and also in lumber. Boating, bathing, and beautiful hill scenery are among the town's varied attractions. Pop., 1901, 862; 1911, 1650.

DALHOUSIE, JAMES ANDREW BROWN RAMSAY, tenth EARL and first MARQUIS of (1812-60). A governor-general of India. The third son of the ninth Earl, he was born at Dalhousie Castle, Midlothian, Scotland, April 22, 1812. He was educated at Harrow and Oxford. In 1837 he was elected Conservative member of Parliament for Haddingtonshire, and at the death of his father in 1838 became Earl of Dalhousie and took his seat in the House of Lords. In 1843 he was appointed Vice President of the Board of Trade and in 1845 succeeded Gladstone as President. His administration at the time of the so-called "Railway Mania" marked his ability, and at the change of ministry in 1846 Lord John Russell paid him a rare compliment in asking him to remain in office to complete his work. In 1847 he became the youngest governor-general ever sent to India. His administration, through additions of territory, development of resources by railways, canals, and other public improvements, forms an important era in Indian history, although, on account of his reduction of the army of occupation, the Indian Mutiny was subsequently laid to his charge. He was the recipient of many honors and in 1849 was created Marquis of Dalhousie. In 1856 he returned to England as an invalid and died after a lingering illness, Dec. 19, 1860. Consult: Arnold, *History of the Marquis of Dalhousie's Administration of British India* (London, 1862-65); the Duke of Argyll, *India under Dalhousie and Canning* (London, 1865); Trotter, *Life of Dalhousie*, in the "Statesmen Series" (London, 1889); Oswald, "Final Development of the Company's Rule," in *Sketches of the Rulers of India*, vol. i (Oxford, 1908); Gilliat, "Lord Dalhousie: a masterful Ruler," in *Heroes of Modern India* (London, 1910); *Private Letters*, edited by Baird (Edinburgh, 1910).

DALIBOR, dāl'ib-ōr. An opera by Smetana (q.v.), first produced in Prague, May 16, 1868.

DALIN, dāl'ēn', OLOF VON (1708-63). "The Father of modern Swedish poetry," whose literary maturity is known in Sweden as the "age of Dalin," a period of transition from the domi-

nance of German to that of French, and especially English, literary ideals. He was born in the Province of Halland, Aug. 29, 1708, the son of a clergyman. He studied at Lund, went to Stockholm as tutor, and entered the civil service in 1731. In 1733 he began to issue anonymously a literary weekly, *Svenska Argus*, that soon became widely popular for its piquant wit. Dalin announced his editorship, published *Thoughts about Criticism*; a comedy, *The Jealous Man* (1738); a tragedy, *Brynhilde* (1739); and the witty *Story of the Horse* (1739), through which runs a satire on the history of Sweden, following it by another satire on contemporary politics, *April Work of our Glorious Time*. Dalin's highest poetic flight is *Swedish Freedom* (1742), a didactic allegory. In 1751 he was made tutor of the Crown Prince (later King Gustavus III), and commissioned by Queen Louise Ulrika, sister of Frederick the Great, to write a *History of Sweden* (4 vols., 1747-62). She also consulted him in establishing the Academy of Arts and Sciences (1753), of which he was made secretary. In this year he was made Privy Councillor, but fell under suspicion of political intrigue and was banished from the court, to which he returned in 1761, two years before his death at Drottningholm, Aug. 12, 1763. Dalin's selected *Works* (issued in 1767 by his half brother) show little of really permanent value, but his personal influence was path breaking and transforming in the national literature. Consult Lamm, *Olof Dalin*, an elaborate biography in Swedish (Upsala, 1908), and also a sketch in the *Nordisk Farmiljebok*, vol. v (Stockholm, 1906).

DALKEITH, däl-kéth'. A market town of Scotland, 6 miles southeast of Edinburgh (Map: Scotland, E 4). It has a corn market, a large and commodious market hall, erected in 1854; manufactures of carpets, brushes, and bricks, besides iron foundries and tanneries. There are large coal mines near by. Much truck gardening for Edinburgh is carried on in the neighboring country. Dalkeith arose around an ancient castle, which was long a stronghold. It was successively held by the Grahams, the Douglasses, the Earls of Morton, and the Earls of Buccleuch. Dalkeith Palace, the chief seat of the Duke of Buccleuch and Queensberry, built about 1700 on the site of the old castle, is a large square structure overhanging the North Esk. Three times English rulers have occupied the palace on visits to Scotland. Three miles to the south of the town lies Cockpen, which took its place in literature in Baroness Nairne's lyric, "The Laird of Cockpen." Pop. (police burgh), 1901, 6733; 1911, 7019.

DALL, CAROLINE WELLS HEALY (1822-1912). An American author and philanthropist, born in Boston. She lectured frequently on theological subjects and on questions associated with the amelioration of conditions affecting woman and was a founder of the Social Science Association, the constitution of which she framed. For many years she conducted a class in literature and morals at her home in Washington. With Mrs. Pauline Wright Davis she founded *Una*, a journal devoted to woman's rights and the pioneer publication of its kind in Boston. The writings of Mrs. Dall are devoted chiefly to a discussion of the rights of woman, and her work entitled *The College, the Market, and the Court, or Woman's Relation to Education, Employment, and Citizenship* (1867), is a widely known contribution to that subject. She is also author

of *What we Really Know about Shakespeare* (1885; 2d ed., 1886); *Nazareth* (1903); *Fog Bells* (1905).

DALL, WILLIAM HEALEY (1845-). An American naturalist, born in Boston. He was a special student under Louis Agassiz. In 1865-68 he accompanied the International Telegraph expedition to Alaska, and from 1871 to 1884 he was on the United States Coast Survey of Alaska. In 1880 he became honorary curator of the United States National Museum, and in 1893 professor of invertebrate paleontology at the Wagner Institute of Science, Philadelphia. In 1884-1905 he was paleontologist to the United States Geological Survey. He wrote works on the natural history of Alaska, such as *Alaska and its Resources* (1870); *Reports of the Molusca of the Blake Expedition* (1880-90); *Molusca of the Southwestern Coast of the United States* (1890).

DALLÆUS. See DAILLÉ.

DALLAS. A town and the county seat of Paulding Co., Ga., 34 miles northwest of Atlanta, on the Southern and the Seaboard Air Line railroads (Map: Georgia, B 2). There are cotton yarn, hosiery mills, and several gold mines. New Hope Church, 4 miles from Dallas, was the scene of a sharp conflict (May 25-28, 1864) between the armies of General Sherman and General Johnston. Pop., 1900, 644; 1910, 1259.

DALLAS. A city and the county seat of Polk Co., Oreg., 63 miles southwest of Portland, on the Southern Pacific, the Salem, Fall City and Western, and the Independence and Monmouth railroads, and on La Creole Creek (Map: Oregon, B 3). It is situated in the fertile Willamette valley, has lumber, saw, and planing mills, and railroad machine shops, and manufactures flour, woolen goods, sashes and doors, organs, foundry products, and tanned leather, the industrial interests being promoted by good water power. Sandstone is quarried in the vicinity. Dallas was settled in 1849 and in 1891 was chartered as a city. It contains a Carnegie library. Pop., 1890, 848; 1910, 2124.

DALLAS. The leading manufacturing city of Texas and the county seat of Dallas County, situated 185 miles (direct) north-northeast of Austin, the State capital, on Trinity River, and on the Chicago, Rock Island, and Gulf, the Gulf, Colorado, and Santa Fe, the St. Louis Southwestern, the St. Louis and San Francisco, the Trinity and Brazos valley, the Texas and Pacific, the Houston and Texas Central, the Texas and New Orleans, and the Missouri, Kansas, and Texas railroads, and on several interurban trolley lines (Map: Texas, D 3). Dallas is the seat of the Southern Methodist University, which has a campus of 625 acres and a \$2,000,000 endowment. There are a number of other educational institutions, including the University of Dallas and St. Mary's College. Other noteworthy features are the municipal building, a fine Carnegie library, Baptist Memorial Sanitarium, St. Paul's Sanitarium, two city hospitals, the cathedrals of St. Matthews and the Sacred Heart, a concrete viaduct across Trinity River to Oak Cliff, and the courthouse. A city plan has been adopted, and all developments and changes are being made in accordance with it under the supervision of a city-planning expert. Eight parks and playgrounds, comprising 713 acres, have been set aside. City Park, Fair Park, and Forest Park with its zoo, are especially attractive. A boulevard system of 62 miles is being

developed. The State Fair of Texas, which has met here annually since 1886, and which in 1913 had 700,000 visitors, has grounds and permanent fireproof buildings worth \$1,364,000. Dallas is the leading industrial city of Texas. Builders' casting, cement, confectionery and bakery products, leather goods, men's clothing, machine-shop products, and sheet-iron goods are among the principal manufactures. In the output of saddlery and harness and cotton-gin machinery Dallas occupies one of the leading positions in the country. The city is situated in the black-waxy belt, the chief cotton-producing region of Texas. The largest inland cotton market in the United States, Dallas handles 1,500,000 bales of spot cotton a year. It ranks second in the country in the distribution of agricultural implements. The city has a commission form of government, with a mayor, and four other commissioners who act as heads of the departments of police and fire, street and public property, water works and sewerage, and revenue and finance. The mayor and commissioners are elected by the people at large and appoint all the other city officers, who are responsible to the commissioners. The city's income in 1913 was \$2,072,072; expenditures, \$1,666,427, the chief items of which were \$342,000 for education and \$267,500 for streets. Because of the agricultural development of the surrounding region, the express and parcel-post businesses of Dallas have made great gains, the former now being seventh in volume of all cities in the United States. In 1914 Dallas was chosen as one of the reserve centres under the Banking Act of 1913. Pop., 1890, 38,067; 1900, 42,638; 1910, 92,104; 1914 (local est.), 131,278.

DALLAS, ALEXANDER JAMES (1759-1817). An American politician. He was born in the island of Jamaica, was educated at Edinburgh and at Westminster, and in 1783 removed from Jamaica to Philadelphia. In 1785 he was admitted to the bar and soon became prominent both as a lawyer and a politician. From 1810 to 1814 Dallas was district attorney for the eastern district of Pennsylvania. He was Secretary of the Treasury in President Madison's cabinet from 1814 to 1816, and it was on his recommendation that in 1816 Congress passed an act to incorporate a new United States bank. For a time in 1815 he discharged the duties of the War as well as of the Treasury Department. The bankrupt treasury that he found on entering office he left with a surplus of \$20,000,000, and with a definite financial policy for the future. He published *Reports of Cases Ruled and Adjudged by the Courts of the United States and of Pennsylvania before and since the Revolution* (4 vols., 1790-1807); *Address to the Society of Constitutional Republicans* (1805); *Exposition of the Causes and Character of the War of 1812-15* (1815). Consult *Life and Writings of Alexander James Dallas*, by his son, George Mifflin Dallas (Philadelphia, 1871).

DALLAS, GEORGE MIFFLIN (1792-1864). An American statesman and diplomat. He was born in Philadelphia, the son of Alexander J. Dallas, graduated at Princeton in 1810 and was admitted to the bar in 1813, and accompanied Mr. Gallatin in his special embassy to St. Petersburg, as private secretary. On his return he practiced law and filled the offices of deputy attorney-general and mayor in Philadelphia; he was also district attorney for the eastern district of Pennsylvania in 1829-31. From 1831 to 1833 he rep-

resented Pennsylvania in the United States Senate and from 1833 to 1835 was Attorney-General of Pennsylvania. In 1837 he was appointed American Minister at St. Petersburg, but was recalled at his own request in 1839. From 1845 to 1849 he was Vice President of the United States, and as such cast the deciding vote for the Tariff Bill of 1846. From 1856 to 1861 he was Minister to the Court of St. James's, where he was called upon to deal with two matters of importance, the Central American question and the recall of the British Minister at Washington, Sir John Crampton, both of which threatened for a time to cause considerable friction between the British and American governments. Consult his *Diary* of his stay in St. Petersburg and in London (Philadelphia, 1892).

DALLAS, ROBERT CHARLES (1754-1824). An English miscellaneous writer and a friend of Lord Byron. He was born at Kingston, Jamaica. He passed his life in Jamaica, the United States, England, and France. On his return from the East Byron showed Dallas the manuscript of *Childe Harold* (first two cantos) and was encouraged by Dallas to publish it. In gratitude for his many services Byron gave him the sums received for this poem and the *Corsair*. Dallas's *Recollections of Lord Byron* appeared in 1824. Dallas also wrote novels, tales, and tragedies.

DALLES, dälz (Fr., slabs, flagstones). A term applied, in regions which have been under French influence, to rapids where the rocky river bed wears in smooth slabs, and consequently especially to rapids produced by the narrowing of rivers between basaltic rocks. The best-known dalles are those in the Columbia, the Wisconsin, the St. Louis, Minn., and the St. Croix, Minn. (qq.v.).

DALLES, THE, or DALLES CITY. A city and the county seat of Wasco Co., Oreg., 85 miles by rail east of Portland, on the Columbia River, at the head of navigation, on the Great Southern Railroad, and on the line of the Oregon-Washington Railroad and Navigation Company (Map: Oregon, D 2). The Dalles contains St. Mary's Academy, a Carnegie library, and a hospital. The city carries on an extensive trade in wool, live stock, grain, and fruit, its manufactures include flouring and planing mills, a wool-scouring plant, box factories, salmon and fruit cannery, lumber yards, machine shops, etc. A Methodist mission, followed by a trading station and military post, was established here in 1838, and the settlement was incorporated in 1858. The government is administered by a mayor, elected annually, and a municipal council. The water works are owned by the city. Pop., 1910, 4880.

DALLES INDIANS. See CHINOOK.

DALLIN, CYRUS EDWIN (1861-). An American sculptor. He was born at Springville, Utah, where he came into close contact with Indian life, in the realistic and impressive portrayal of which he excels all other artists. He studied under Truman Bartlett in Boston and under Chapu in Paris, where Buffalo Bill's Wild West Show inspired his first equestrian statue, the "Signal for Peace" (1890), which received a gold medal at the Chicago Exposition (1893), and is now in Lincoln Park in that city; this was followed in 1899 by "The Medicine Man" (Fairmount Park, Philadelphia), considered one of the most notable products of American sculpture. His other works include the marble statue of Sir Isaac Newton in the Congressional Library at Washington; "Don Quixote," which received

a gold medal at the St. Louis Exposition (1904); the monument to the pioneers in Salt Lake City, and "Peace or War" (1906); and the "Redskin's Prayer" (1909). Consult his biography by Downs, in *Brush and Pencil*, vol. v, and Taft, *History of American Sculpture* (New York, 1903).

DALLING AND BULWER, BARON. See BULWER, WILLIAM HENRY LYTTON.

DALLINGER, WILLIAM HENRY (1841-1909). An English scientist, born at Devonport. He entered the Wesleyan ministry in 1861 and for many years preached in Liverpool. But he also gave a great deal of his time to scientific investigation with the microscope, and this work he continued while acting as principal of Wesley College, Sheffield (1880-88), as well as later. In 1880 he was made a fellow of the Royal Society and from 1883 to 1887 was president of the Royal Microscopical Society. He also lectured at Cambridge and at Oxford and was senior lecturer to the Gilchrist Educational Trust. He wrote *Minute Forms of Life* (1886); *The Origin of Life* (1878); *The Creator and What we May Know of the Method of Creation* (1887); and a thorough revision of Carpenter's *The Microscope and its Revelations* (1901).

DALL'ONGARO, dāl-on'gā-rō, FRANCESCO (1808-73). An Italian poet, novelist, and patriot, born near Treviso. Abandoning the priesthood, for which he found himself unfitted, he started at Trieste a revolutionary journal, the *Favilla*, served under Garibaldi in 1849, and, after living for some years in exile in Paris and Brussels, returned to Florence to accept a chair of literature. Later he taught at Naples. He led a life full of sorrow and misfortune. He left a great variety of writings, including plays once quite popular. He is remembered chiefly, however, for his graceful and spirited poems, many of them in the Venetian dialect, and for having adopted the *stornello*, a particular form of folk poem, as a medium for patriotic verse, his famous *Stornelli politici*.

DALLMAN, GUSTAF (HERMANN) (1855-). A German Orientalist, born in Niesky, Silesia, and educated at Moravian schools there and in Guedenfeld. In 1881 he was made instructor in Old Testament theology at Guedenfeld and in 1887, after becoming doctor of philosophy at Leipzig, lectured in Delitzsch's Hebrew College. In 1891 he was appointed instructor, and in 1896 professor, at the University of Leipzig, from which in 1900 he went to a chair of theology at Halle. In 1902 he took charge of the German Evangelical Archaeological Institute at Jerusalem, where he received appointments as Swedish Consul (1903) and Danish Consul (1910). His most important work was done in Palestine and includes: *Grammatik des jüdisch-palästinischen Aramäisch* (1894; revised 1905); *Aramäisch-neuhebraisches Wörterbuch* (1897-1901); *Wörter Jesu* (1898; Eng. by Kay, 1902); *Palästinajahrbuch* (1905 et seq.); *Petra und seine Felsheiligtümer* (1908); *Neue Petra-Forschungen* (1912).

DALMANITES, dāl-mā-nī'téz (named in honor of the geologist *Dalman*). A genus of fossil trilobites found in rocks of Ordovician to Devonian age, especially in those of the Silurian, in North America, Europe, Asia, and Australia. The carapace is depressed, with well-marked axis, is ovate in outline, tapering to the tail, and has 11 thoracic segments, with a large, often pointed, pygidium. The head

shield is broad, sometimes with an anterior point, and the genal angles are pointed. The eyes are large and usually well raised above the general surface and are provided with numerous distinct facets. The glabella has a broad frontal lobe and three lateral lobes. *Dalmanites* has several related genera—*Acaste*, *Chasmops*, *Pterygomotopus*, etc.—which differ in more or less conspicuous features, and which are all members of the family Phacopidae, of which the type genus is *Phacops*. About 100 species are known in the genus *Dalmanites*, and of these the best known are *Dalmanites timulurus* of the North American Niagaran series, its representative *Dalmanites caudatus* of the English Wenlock, and *Dalmanites socialis* of the Bohemian Ordovician. See PHACOPS and TRILOBITE.

DAL'MANUTHA (Lat., from Gk. *Δαλμανούθα*, *Dalmanoutha*). A place mentioned in Mark viii. 10, as the locality to which Jesus retired after feeding the 4000. Its site is not certainly identified. Matthew, in the parallel passage (xv. 39), has "Magadan," which, if taken for "Magdala," must have been on the western shore of the lake, some 7 miles south of the Plain of Gennesaret. It is of interest to note that between Tiberias and Magdala there is a bowl-shaped valley or hollow, containing the ruins of a village and some more ancient foundations near several copious springs, called *Ain el-Bārideh*. The dragomans speak of this valley as *Wādy Dalmanutha*, and it is possible that Matthew and Mark may refer to the same general locality. Consult Tristram, *The Land of Israel*, p. 413 (1876), and Sanday, *Sacred Sites of the Gospels*, p. 22 (1903). Burkitt, *Earliest Sources of the Life of Jesus*, p. 328 (1910), considers the name due to the confusion of the copyist who was struggling with a poorly legible text, but offers no suggestion as to what the original name may have been.

DALMATIA, dāl-mā'shī-á (Fr. *Dalmatie*, Ger. *Dalmatien*, It. *Dalmazia*, Serbo-Croatian, *Dalmacija*, Gk. *Δαλματία*, from the name of the former capital city of the province, Gk. *Δελμύιον*, Lat. *Delmnum* or *Dalmum*, an Illyrian word believed to signify a sheep pasture). The southernmost crownland of Austria, occupying a narrow strip of land along the Adriatic, and bordering on Croatia, Bosnia, the Herzegovina, and Montenegro (Map: Austria, E 5). Its area, including the adjacent islands, is 4936 square miles. The eastern part of Dalmatia belongs to the region of the Dinaric Alps, which form a wall on the side of Bosnia, while parallel to the coast rise the mountain chains of Castella, Mosor, and a few others. The coast is deeply indented with numerous rock-bound bays and inlets and is skirted by many islands. The scenery of the Dalmatian coast is famed for its picturesqueness. The Gulf of Cattaro is one of the finest natural harbors in Europe. The mountains are generally composed of limestone and barren of vegetation. The limestone is porous, abounding in caverns and passages, so that there is a system of underground water-courses. There are no rivers of importance. A few small lakes occur, and considerable tracts are covered with swamps and morasses, but most of the country suffers from drought. Dalmatia has almost a subtropical climate. The average annual temperature varies between 57° and 63°.

Owing to the frequency of political upheavals in Dalmatia, agriculture has been in a back-

ward state. In 1912 about 12 per cent of the total area was in arable land; in addition, vineyard, garden, orchard, etc., probably covered less than 10 per cent. The geographical position of the region makes it well adapted to the cultivation of southern fruits. The vine and the olive grow profusely on the coast. The famous maraschino cordial comes from Dalmatia, where it is made from a cherry (marasca) peculiar to the country. Fishing is carried on to a considerable extent. Cattle raising and dairying are also of some importance. The chief mineral products are lignite, asphalt, and salt, mined on a small scale. The shipbuilding and the wine and oil-pressing industries should be mentioned. The most important ports are Zara, Ragusa, and Spalato. Cereals are imported; olive oil, fish, meat, hides, honey, wine, and asphalt are exported. In 1911 there were 145 miles of railway, 153 telegraph offices, and 217 post offices.

Local affairs are under the control of the Diet, consisting of 43 members, of whom 10 are elected by citizens paying a direct annual tax of at least 100 kronen, 8 by the towns, and 20 by the rural communities, and the remaining 5 consist of the Roman Catholic Archbishop, the Greek Orthodox Bishop, and three representatives of the chambers of commerce of Zara, Ragusa, and Spalato. To the Lower House of the Austrian Parliament Dalmatia sends 11 delegates, of whom two are elected by indirect universal suffrage. The crownland is divided into 14 administrative districts. In 1911 there were 458 public elementary schools, with an enrollment of 58,606 pupils. There are five gymnasia and three realschulen. The majority of the inhabitants, perhaps three-fourths, are illiterate. The population of Dalmatia in 1890 was 527,426; in 1900, 593,784; in 1910 (census of December 31), 645,666, or 2.26 per cent of the population of Austria. According to vernacular, in 1910, about 96.2 per cent of the inhabitants were Serbo-Croat, 2.8 per cent Italian, and 0.5 per cent German. Roman Catholics constituted over 83.3 per cent, and Greek Orthodox over 16.3 per cent. The population of the larger towns was as follows at the 1910 census (population of communes in parenthesis): Zara, capital of the crownland, 14,056 (36,595); Spalato, 21,407 (27,492); Sebenico, 12,588 (29,579); Ragusa, 8958 (14,367); Blatta, 6837 (8862). The Dalmatians are tall and short-headed (height, 1.715 m.; index, 87). They are supposed to be fundamentally the modern representatives of the ancient Illyrians, subjected by Augustus and modified afterward by Mæso-Goths, Avars, and Slavs. These Dalmatian Slavs often figure under the name of Morlaks. Capital, Zara (q.v.).

In ancient times Dalmatia was inhabited by the Dalmatii, who for nearly 150 years resisted successfully the Romans, but who were finally subdued by Augustus. After the fall of the Western Empire Dalmatia, which had formed the southern part of the Province of Illyricum, was occupied by the Goths, from whom it was taken by the Byzantines. Early in the seventh century the Croats and Serbs took possession of the country districts, but not the cities, which were the places of refuge for the older population. About the beginning of the twelfth century King Ladislas of Hungary incorporated a part of Dalmatia with Croatia, while the other part was in the possession of the Venetian Re-

public, the Doge of which had in 998 assumed the title of Duke of Dalmatia. In the south the little Republic of Ragusa (q.v.) maintained an independent existence. In the sixteenth century most of the country was conquered by the Turks. In 1699 almost all except Ragusa was restored to Venice. By the Peace of Campo Formio (1797) Dalmatia, with Venice itself, became subject to Austrian rule; and when Austria, in 1805, retroceded it to Napoleon, it was annexed to the Kingdom of Italy. In 1809 it was constituted part of the dominion of the Illyrian Provinces. Since 1814 Dalmatia has formed part of the Austrian Empire. Consult: Jackson, *Dalmatia, the Quarnero and Istria, etc.* (London, 1893); Freeman, *Subject and Neighbor Lands of Venice* (ib., 1881); Modrich, *La Dalmazia* (Turin, 1892); Royle, *Dalmatia Illustrated* (London, 1900).

DALMATIA, DUKE OF. See SOULT.
DALMATIAN (dál-má'shan) **DOG**. See COACH DOG.

DALMATIC. In ecclesiastical art and in the usage of the Roman Catholic church, the distinguishing vestment of a deacon or subdeacon, taking its name from the ordinary costume of Dalmatia. Pope Sylvester, in the fourth century, ordered deacons to wear it in the church. It is also worn by bishops, cardinal priests, and abbots at pontifical functions. As an ecclesiastical vestment it was originally white, with broad perpendicular stripes of purple, it now follows the color of the day, with the stripes represented in embroidery. It reaches to the knee and has wide sleeves. Consult Simpson, *Use of Vestments in the English Church* (New York, 1909), and Namfa, *Costumes of Prelates of the Catholic Church* (Baltimore, Md., 1909). See COUTUME, ECCLESIASTICAL.

DALMORES, dál'mó'res', CHARLES (1871-). A distinguished French dramatic tenor, born at Nancy. His musical talent manifested itself at an early age, and when only six years old he received systematic instruction. His first ambition was to become a violinist, and for this purpose he entered the conservatory at Nancy. Having to abandon the violin after breaking his arm, he took up the horn. He continued his study at the Paris Conservatory, won the first prize, and began his career as hornist in the Colonne orchestra. From 1888 to 1894 he was a member of the Lamoureux orchestra. At the same time he studied the cello and attained considerable skill on this instrument also. Ever since his arrival in Paris he had felt a burning desire to become a great singer. His opportunity for study came in 1894, when he accepted a position as teacher of the horn at the conservatory at Lyons. Here Dauphin, one of the singing masters, heard him and trained his voice. His début at Rome in 1899 was an emphatic success. His great fame began when in 1906 he appeared as one of the principal tenors of the Manhattan Opera House in New York. After his return to Europe the doors of the principal opera houses were open to him, but he would not bind himself permanently. Until the dissolution of the Manhattan Company in 1910 Dalmore's remained leading tenor of the organization, and after that he was the foremost tenor of the Chicago Opera Company. He is not only a great singer, but also an actor of more than ordinary ability.

DALNY, dál'ni, or DAIRN, or DAIREN. A seaport in Manchuria, on the peninsula of Liao-

tung, about 20 miles north of Port Arthur (Map: China, F 4). The harbor of 132 acres, ice-free throughout the year, is deep enough for large vessels. The port was intended by the Russians to become the centre of their trade on the Pacific, especially with Japan and China. Although founded in 1899, Dalny has a considerable and rapidly increasing population. It was occupied by the Japanese, under General Oku, May 28, 1904, following the battle of Kin-Chow or Nanshan. The lease of it, together with the rest of the Liao-tung peninsula, by Russia was transferred to Japan by the Treaty of Portsmouth. On Sept. 1, 1906, it became a free port. Its commerce has greatly increased in recent years. The imports, which a decade ago were extremely small, were in 1911 \$17,047,199 and in 1913 \$21,572,000; exports in 1911, \$22,975,000, 1913, \$28,973,000. About three-fourths of the most important imports are from Japan, chiefly cotton goods and other manufactures. Soyabean oil and cake are the articles of export. The area of the leased territory is 1220 square miles and its population in 1913 was about 510,000.

DALOU, dā'loo', (AIMÉ) JULES (1838-1902). The most eminent French sculptor, after Rodin, of the later nineteenth century. He was born in Paris, Dec. 31, 1838, the son of a glove maker. As a lad, he fought behind the barricades of 1848, and ever after he was identified with the workingman's cause. His talent in modeling attracted the attention of Carpeaux, under whom he studied at the Ecole des Arts Decoratifs, and although he afterward was a pupil of the Classicist Duret in the Ecole des Beaux-Arts, Carpeaux was his real master. The young revolutionary held aloof from official contests, but exhibited with varying success until 1870, when his "Women Embroidering" obtained a prize. He was also occupied with decorative works, such as the four groups for the Hôtel Paiva, and with designs for goldsmith's work and ceramics. Having held office under the Commune, he was compelled in 1871 to flee to England. In London he was welcomed by his friend the painter Legros, who procured him commissions and aided him to secure an appointment as adjunct professor in the South Kensington Museum schools. The fruitful training which he gave his pupils was the principal factor in breaking the dreary classic traditions of British sculpture and establishing its present excellence. While in London he modeled many terra-cotta busts, statuettes, and several statues, one of which, reproduced in bronze as "Maternity," is in front of the Royal Exchange. After the general amnesty of 1879 he returned to Paris and soon received from the city the commission for his principal work, the colossal bronze "Triumph of the Republic," in the Place de la Nation (1880-89), one of the most important public monuments in modern sculpture. The figure of the Republic towers over a chariot drawn by two lions, attended by the four figures of liberty, justice, freedom, and peace. In 1883 he received a medal of honor for two admirable high reliefs, "The Republic" and "Mirabeau Answering Dreux-Brézé," the latter a composition of great power, now in the Chamber of Deputies. A bronze cast of his group "Silenus" (1885) is in the Jardin de Luxembourg. In 1889 he was awarded the Grand Prix of the International Exposition. He was an officer of the Legion of Honor and the first president of the sculpture section of the secessionist Société Nationale des Beaux-Arts.

Dalou may be well called the official sculptor of the Third Republic. His powerful public monuments adorn the provincial cities as well as Paris. Most of them are groups, in which the statue or bust of a hero surmounts the pedestal with allegorical or other figures at the base. Among the best are the monument to Delacroix in the Luxembourg Gardens, that of the engineer Alphonse with the statues of Dalou and three others at the base, Lavoisier in the amphitheatre of the Sorbonne, Gambetta at Bordeaux, and Hoche in Quiberon. He also executed many genre groups, reliefs, and portrait busts, such as those of Charcot, Rochefort, and others, and much decorative work, architectural as well as ceramic, including the two celebrated vases in the Luxembourg. His last years were devoted to a colossal "Monument of Labor," for which many plastic sketches survive, but which an untimely death prevented him from completing. Dalou and Rodin are the most prominent and representative figures in French sculpture of the later nineteenth century. The former is the logical successor of Rude and Carpeaux, whose influence appears in his work; but his art is also reminiscent of mediæval sculpture and especially of the decorative art of the eighteenth century. For, unlike Rodin, who broke entirely with the past, he insisted upon conserving the national tradition. The best monograph on Dalou is by his friend Dreyfous (Paris, 1903); see also that of Cornu, in *Portraits d'her* (ib., 1909).

DALRIADA. The ancient name for the northern half of the County of Antrim in Ireland, now known as "The Route." The Dalriads are supposed to have descended from Carbrí Riada (Riogh-fhada, i.e., of the long wrist), a son of a chief of the Scots in Ireland, who ruled not only in the district of Ireland, named after him, but, according to Bede, crossed to Scotland and settled in the lands of the Picts. In the beginning of the sixth century the Dalriads, led by Fergus, passed over to Argyllshire, where they settled themselves permanently, and formed the kingdom of "Dalriada in Albany." The Scottish colonists increased so much in power that they threw off the yoke of Ireland and about 627 attempted to subdue that island, but were defeated at Magh Rath, in County Down. The Dalriads nevertheless extended their kingdom in Scotland, and in 844 their king, Kenneth, became King of the Picts and thus united under one sceptre the Dalriads, or Scots, and the Picts. Later his kingdom was known as the Kingdom of Albany, or Scotland. Consult Skene, *Celtic Scotland* (3 vols., Edinburgh, 1876-80).

DALRYMPLE, dāl'rim-p'l, ALEXANDER (1737-1808). A British hydrographer; a younger brother of Sir David Dalrymple, Lord Hailes (q.v.). He was born at New Hailes, near Edinburgh, July 24, 1737. In 1752 he obtained an appointment in the East India Company's service; but he labored under the disadvantage of youth and imperfect education, until Lord Pigot, Governor of the Presidency, gave him lessons in writing. In 1758 he made a voyage of observation among the Eastern islands, and at Sulu negotiated a commercial treaty with the Sultan, which he returned to consummate in 1762, but was unsuccessful. In 1765 he returned to Britain and in 1775 was sent to Madras as a member of council, but was recalled in two years, apparently without good reason. Four years later

he was appointed hydrographer to the East India Company and shortly after received a pension. In 1795, when the British Admiralty resolved to establish a similar office, it was conferred on Dalrymple, who held it until his summary dismissal, occasioned by an excess of zeal, on May 28, 1808. Depression at the humiliation occasioned his death, three weeks afterward, on June 19, 1808, at Marylebone, London. He wrote a vast number of letters, pamphlets, etc., containing plans for the promotion of British commerce in various parts of the world, political dissertations, accounts of geographical expeditions, etc., and his library, containing valuable geographical and scientific works, was acquired by the Admiralty.

DALRYMPLE, SIR DAVID, LORD HAILES (1726-92). A Scottish judge and antiquarian, born in Edinburgh, Oct. 28, 1726. He was the grandson of Sir David Dalrymple, youngest son of Viscount Stair. Educated at Eton, in Edinburgh, and finally in Leyden, he returned to Scotland in 1746 and in 1748 was called to the Scottish bar. In 1766 he was appointed judge of the Court of Session, with the title of Lord Hailes. Ten years after, he was made Justiciary Lord. He set a high standard for humanitarian treatment of criminal cases—a practice which was not prevalent at that time. He died Nov. 29, 1792. He was a voluminous writer. His most important works are: *Annals of Scotland, from the Accession of Malcolm III, Surnamed Canmore, to the Accession of Robert I* (1776), with continuation to the *Accession of the House of Stuart* (1779); and *An Inquiry into the Secondary Causes which Mr. Gibbon Has Assigned to the Rapid Growth of Christianity* (1786). He also wrote works on legal antiquities and ancient church history, edited old Scottish poems, and published biographical sketches of notable Scotchmen. He was the esteemed friend and correspondent of Dr. Johnson. Consult "Memoirs of Lord Hailes," in late editions of the *Inquiry*. Consult also Boswell, *Life of Johnson*.

DALRYMPLE, SIR JAMES, first VISCOUNT STAIR (1619-95). A Scottish lawyer and statesman. The son of a small proprietor in Ayrshire, he was born at Drummurchie in May, 1619. Educated at Glasgow and Edinburgh universities, at an early age he entered the army raised in Scotland to repel the religious innovations of Charles I, but returned to civil and literary pursuits, and in 1641 was appointed professor of philosophy at Glasgow. In 1648 he entered as an advocate at the Scottish bar, where he rapidly acquired distinction. In 1649 and again in 1650 he was appointed secretary to the commissioners sent to Holland by the Scottish Parliament to treat with Charles II, and in 1657 was induced to become one of the "commissioners for the administration of justice" in Scotland under Cromwell's government. Dalrymple was a Royalist, but resigned his seat in 1664 on his refusal to take the "declaration" oath, which denied the right of the nation to take up arms against the King. Charles, however, unwilling to lose so faithful a servant, allowed him to take the oath in a modified form, and he returned to the bench. The King further honored him with a baronetcy and in 1671 appointed him Lord President of the Court of Session. He was invariably the advocate of moderate measures. In 1681 he refused to take the new test oath and resigned his appointments. The same year he published the *Institutions of*

the Law of Scotland, which is still the grand textbook of the Scottish lawyer. After some time spent on his estate in Wigtownshire Dalrymple went to Holland in 1682 to escape factious persecution. During 1684-87, while residing at Leyden, he published at Edinburgh his *Decisions*; and in 1686, at Leyden, a Latin work entitled *Physiologia Nova Experimentalis*. He accompanied the Prince of Orange on his expedition to England. William reappointed him Lord President of the Court of Session and created him Viscount Stair, Lord Glenluce and Stanraer in 1690. He died in Edinburgh, Nov. 25, 1695. His daughter Janet, who died in 1669, within a month of her marriage to Dunbar, Laird of Baldoon, is the original of Scott's *Bride of Lammermoor*. Consult Mackay, *Memoirs of Sir James Dalrymple, first Viscount Stair* (Edinburgh, 1873), and Graham, *Annals and Correspondence of the Viscount and first and second Earls of Stair* (ib., 1875).

DALRYMPLE, SIR JAMES (1-c.1714). The second son of Viscount Stair and the author of *Collections Concerning Scottish History Preceding the Death of David I* (1705). He was appointed one of the commissaries of Edinburgh following his admission to membership of the faculty of advocates in 1675. He was made a baronet of Nova Scotia in 1698. As an antiquary he ranked among the best of his time.

DALRYMPLE, SIR JOHN, first EARL OF STAIR (1648-1707). A Scottish statesman. He early became the leader of the Presbyterians in Scotland, and in 1687 he became Lord Advocate as a concession to that party. He took a leading part in the revolution of 1688 in Scotland and was one of those who brought the offer of the Scottish crown to William and Mary. William reappointed him Lord Advocate, and in 1690, on his father's elevation to a viscountcy, he became the Master of Stair. But, inspired by his fanatical hatred for the Highland clans, he instigated the "Massacre of Glencoe," which brought great odium on his head and forced his retirement. At the accession of Anne (1702) he was a privy counselor for Scotland, and the next year he was created Earl of Stair. He earnestly promoted the union of Scotland with England, and his death from apoplexy, Jan. 8, 1707, was very possibly brought about by his efforts in behalf of the treaty. Dalrymple was a strong partisan, and many of his acts are open to criticism, but his patriotism and love for Scotland are undoubted. Consult Graham, *Annals and Correspondence of the Viscount and first and second Earls of Stair* (Edinburgh, 1875).

DALRYMPLE, SIR JOHN, of Cranston (1726-1810). The grandson of Sir James Dalrymple, and author of *Memoirs of Great Britain and Ireland from the Dissolution of the last Parliament of Charles II until the Sea Battle off La Hogue* (3 vols., 1771), which created a sensation at its appearance, owing to the revelations it contained, culled from authoritative state papers.

DALRYMPLE, SIR JOHN, second EARL OF STAIR (1673-1747). A Scottish general and diplomat. The second son of the first Earl and grandson of Viscount Stair, he was born in Edinburgh, July 20, 1673. When eight years old he killed his elder brother by the accidental discharge of a pistol. Alienated from parental affection by this unhappy circumstance, he was placed under the care of a clergyman, who by prudence and kindness developed the excellent

qualities of the youth. He proceeded to Leyden University, where he won a reputation for scholarship, and, after completing his curriculum at Edinburgh, in 1701, accepted a commission as lieutenant colonel of the Scottish Regiment of Foot Guards and gained high distinction in Marlborough's campaigns. In 1711 he retired from the army, and, when George I succeeded to the throne, Dalrymple, who had become Earl of Stair by the death of his father in 1707, was made lord of the bedchamber, Privy Councillor, and commander in chief of the forces of Scotland. In 1715 he went as Ambassador to France and exhibited the highest ability in counteracting the schemes for the reinstatement of the Pretender. But, as he refused to flatter his countryman, Law, then high in favor with the regent Orleans, he was recalled. For 22 years he lived in retirement at Newliston, near Edinburgh, and devoted himself chiefly to scientific agriculture, in which he originated distinct advancements. He was the first to plant turnips and cabbages in the open fields. In 1742 he was sent as Ambassador to Holland and in the following year served under George II at the battle of Dettingen. Later he was made commander in chief of the forces of Great Britain. He died in Edinburgh, May 9, 1747. His Countess, a beautiful and cultured woman, who survived him 12 years, is the heroine of Scott's novel *My Aunt Margery's Mirror*. Consult Graham, *Annals and Correspondence of the Viscount and First and Second Earls of Stair* (Edinburgh, 1875).

DALSGAARD, dāls'gård, CHRISTEN (1824-1907). A Danish genre painter, born at Knabsholm, near Skive, Jutland. He studied at the Copenhagen Academy and under Rörbye, was made professor of drawing at the Academy of Sorø in 1862, and was elected to the Copenhagen Academy in 1872. His impressive delineations of Danish peasant life, showing a keen sense of observation and imbued with sincere sentiment, have justly caused him to be esteemed one of the typical masters of Denmark. Especially noteworthy among them are: "Christmas Morning on a Farm" (1848); "Seizure of Debt" (1860); "Fisherman and Daughter" (1854); "Mormons Visiting a Joiner's Home" (1856); all in the Gallery at Copenhagen and "The Farewell" (1860), in the Museum at Aarhus. Consult his biography by Knud Søborg (1902).

DALTON, dāl'ton. A city and the county seat of Whitfield Co., Ga., 98 miles north-northwest of Atlanta, on the Southern and the Western and Atlantic railroads (Map: Georgia, A 1). It is in a region possessing extensive deposits of iron, limestone, and manganese; exports cotton, grain, and fruits, and has agricultural-implement and marble works, foundries, jail and convict car factory, and machine shops, cotton mills, chair factory, and lumber mills. Settled and incorporated in 1848, Dalton is governed by a mayor chosen every two years, a board of aldermen, and three commissioners. The water works, and gas and electric-light plants are owned by the city. During the latter part of 1863 and the spring of 1864 Dalton was the headquarters of the Confederate General Joseph E. Johnston, who commanded the army for the defense of Atlanta. Several minor battles were fought in this vicinity. Pop., 1890, 3046; 1900, 4315; 1910, 5324.

DALTON. A town in Berkshire Co., Mass., 5 miles east of Pittsfield, on the Boston and Albany Railroad (Map: Massachusetts, A 3). It

contains a public library. The chief manufactures are paper, woolsens, and spark coil, the paper being of an unusually high grade and used by the government for currency. Pop., 1900, 3014; 1910, 3568.

DALTON, HERMANN (1833-). A German Protestant theologian. He was born at Offenbach-on-the-Main, Aug. 20, 1833; studied at Marburg, Berlin, and Heidelberg; was pastor of the German Reformed congregation in St. Petersburg (1858-88) and has since lived in Berlin. He has written much on the history of religion in Russia, including *Geschichte der reformirten Kirche in Russland* (1865); *Johannes a Lasco* (1881; Eng. trans. 1886); *Verfassungsgeschichte der evangelisch-lutherischen Kirche in Russland* (1887); *Urkundenbuch der evangelisch-reformirten Kirche in Russland* (1888); *Zur Gewissensfreiheit in Russland* (1890); *Die russische Kirche* (1891); *Zur Geschichte der evangelischen Kirche in Russland* (1893-98); and also *Lebenscrinnerungen*, vols. i-iii (1905-09).

D'ALTON, JOHANN SAMUEL EDUARD. See ALTON.

DALTON, JOHN (1766-1844). A celebrated English chemist and natural philosopher, born at Eaglesfield, near Cockermouth, in Cumberland. He received his early education in the Quakers' school of his native place, and from 1781 to 1793 acted as assistant and as joint manager in a boarding school kept by a relative in Kendal. Here his love of mathematical and physical studies was first developed. He wrote several mathematical essays and in 1788 commenced a journal of meteorological observations, which he continued throughout his whole life. From 1793 to 1799 he was teacher of mathematics and the physical sciences in the new college at Manchester, where he chiefly resided during the remainder of his life, though frequently employed, after 1804, in giving lectures on chemistry in several large towns. In the years 1808 to 1810 he published his *New System of Chemical Philosophy* (2 parts, London), to which he added a third part in 1827. In 1817 he was appointed president of the Literary and Philosophical Society at Manchester. He was also a member of the Royal Society and of the Paris Academy and in 1833 received a pension of £150, afterward raised to £300. In the same year Dalton's friends and fellow townsmen collected £2000 to raise a statue to his honor, which was executed by Chantrey and placed at the entrance of the Royal Institution in Manchester. Dalton was also honored by the University of Oxford with the degree of D.C.L. and with that of LL.D. by the University of Edinburgh. His chief physical researches were those on the constitution of mixed gases, on the force of steam, on the elasticity of vapors, and on the expansion of gases by heat. In chemistry he distinguished himself by his progressive development of the atomic theory (see CHEMISTRY), as also by his researches on the absorption of gases by water, on carbonic acid, carburetted hydrogen, etc. His papers are mostly contained in the *Memoirs of the Literary and Philosophical Society of Manchester*, the *Philosophical Transactions*, Nicholson's *Philosophical Journal*, and Thomson's *Annals of Philosophy*. Besides these, we have his *Meteorological Essays and Observations* (London, 1793; 2d ed., 1834). Profound, patient, and intuitive, Dalton had precisely the faculties requisite for

a great scientific discoverer. His atomic theory has revolutionized the science of chemistry and has yielded a greater number of valuable results than, perhaps, any other idea ever introduced into physical science. In his habits Dalton was simple; in his manners, grave and reserved, but kindly. Consult Roscoe and Harden, *A New View of the Origin of Dalton's Atomic Theory* (New York, 1896), and Meldrum, *Avogadro and Dalton* (Aberdeen, 1904, University Studies).

DALTON, JOHN CALL (1825-89). An American physiologist and physician. He was born in Chelmsford, Mass., and graduated at Harvard in 1844 and at the Harvard Medical School in 1847. He was professor of physiology successively in the University of Buffalo, in the Vermont Medical College, and in the College of Physicians and Surgeons, and in 1883 succeeded Alonzo Clark as president of the last. During the Civil War he served as surgeon in the Federal army. He contributed many articles on medical subjects to scientific journals and, in addition, published a *Treatise on Human Physiology* (1859); *A Treatise on Human Physiology for Schools, Families, and Colleges* (1868); *The Experimental Method of Medicine* (1882); *Doctrines of the Circulation* (1884); *Topographical Anatomy of the Brain* (1885).

DALTON-IN-FURNESS, dal'ton-in-fur'nēs. A market town in Lancashire, England, on the peninsula of Furness, about 4 miles northeast of Barrow-in-Furness (Map: England, C 2). The church of St. Mary, restored, is famous as the burial place of the painter George Romney. A canal about 3 miles long connects the town with the Irish Sea. It has extensive iron mines and iron works. Pop., 1890, 13,300; 1901, 13,020; 1911, 10,763.

DALTONISM. See COLOR BLINDNESS.

DALTON'S LAW. See GASES, GENERAL PROPERTIES OF.

D'ALVIELLA, däl-vyē'lä, COUNT GOBLET (1846-). A Belgian legislator and writer, born at Brussels. He served in the Belgian Parliament and as rector of the University of Brussels, and was Hibbert lecturer at Oxford in 1891. As correspondent of the *Independence Belge*, he went to India with Edward VII, then Prince of Wales; later he was Envoy Extraordinary to Constantinople; and for long he was director of the *Revue Belgique*; finally he became Vice President of the Belgian Senate, and professor in the University of Brussels. His publications include: *Sahara and Lapland* (1874); *Inde et Himalaya* (1877; 2d ed., 1880); *Contemporary Evolution of Religious Thought in England, America, and India* (1885); *The Migration of Symbols* (1894); *Ce que l'Inde doit à la Grèce* (1897); *Elucisima de quelques problèmes relatifs aux mystères d'Eleusis* (1903); *A travers le Far West, souvenirs des États-Unis* (1906); *L'Université de Bruxelles pendant son troisième quart de siècle* (1909); *Croyances, Rites, Institutions* (3 vols., 1911).

DALY, ARNOLD (1875-). An American actor, born in Brooklyn, N. Y. He made his first stage appearance in 1892 in *The Jolly Squire*. He became known especially as a producer of the dramas of Bernard Shaw, having brought out that playwright's *Candida* (1903), and *Mrs. Warren's Profession* and *You Never Can Tell* (1904), and having toured with *Arms and the Man*, *Candida*, and *The Man of Destiny* in 1906. In 1911 he played the part of Brunt-

schli, in *Arms and the Man* at the Criticism Theatre in London. He appeared in *General John Regan* in 1913-14 in New York.

DALY, däl'ē, CÉSAR DENIS (1811-94). A French architect and writer on architecture, born at Verdun, Meuse. His principal work as an architect is the restoration of the cathedral of St. Cecilia at Albi, for which designs were shown at the Exposition in 1855. But the work upon which his reputation rests is the monumental journal, *Revue générale de l'architecture et des travaux publics* (1840-90). The 45 volumes contain a theoretical and practical library of architecture. Among his other publications are: *Les motifs historiques d'architecture et de sculpture d'ornement* (1874); *L'Architecture funéraire* (1870); *L'Architecture priée au XIXème siècle* (Paris, 1870-77); *Motifs divers de serrurerie* (ib., 1881-82); *Des hautes études d'architecture* (1889).

DALY, CHARLES PATRICK (1816-99). An American jurist and geographer, born in New York City. He was admitted to the bar in 1837 and was Chief Justice of the Court of Common Pleas in New York for 27 years, until retired by the age limit in 1868. From its organization in 1864 until his death, Judge Daly was president of the American Geographical Society. Besides his *Historical Sketch of the Judicial Tribunals of New York* (1855), and many legal papers of importance, he wrote: *When Was the Drama Introduced into America?* (1864); *First Settlement of Jews in North America* (1875); *What we Know of Maps and Map-Making before Mercator* (1879); and a *History of Physical Geography*.

DALY, JOHN AUGUSTIN (1838-99). An American playwright and theatrical manager. He was born at Plymouth, N. C., and educated at Norfolk, Va., and in the public schools of New York City. He was dramatic critic for the *Sunday Courier* in 1859 and held similar positions on the *Express*, *Citizen*, *Sun*, and *Times* for some years. Meanwhile he was producing adaptations of several plays, and in 1867 his first original success, *Under the Gaslight*, was brought out at the New York Theatre. In 1869 he opened in Twenty-Fourth Street the playhouse known as the Fifth Avenue Theatre, which, with such "stars" as Fanny Davenport, Mrs. Scott Siddons, E. L. Davenport, and Clara Morris, quickly became very popular. After the destruction of this theatre by fire and an interval of a few months in another, he opened, in 1874, Daly's Fifth Avenue Theatre, which he managed till 1877. In 1879 he returned, after a year of study in Europe, and opened the house since known as Daly's Theatre on Broadway, near Thirtieth Street, which he controlled until the time of his sudden death in Paris. Mr. Daly had in his company at various times many of the best-known players in America. For years Miss Ada Rehan was his leading actress. Several times he went with his whole company to California, to England, and to Germany and France. In 1893 he leased a theatre in London. He wrote many adaptations from German and French plays, one of his earliest efforts being from Mosenthal's *Deborah* in 1862. In the long list of works which he wrote or adapted are: *Divorce*, *Pique*, *Under the Gaslight*, *The Railroad of Love*, *Seven-Twenty-Eight*, *The Great Unknown*, *Love on Crutches*, and *The Last Word* (1890). Mr. Daly was especially noted for excellence in scenic presentation, and his Shakespearean revivals

have received warm praise both in this country and in England. In 1894 he was presented with the Letare medal of the University of Notre Dame, Ind. He was a great book lover and made a remarkable collection of plates on biblical subjects, Thackeray, etc., which was sold at auction in the settlement of his estate. Besides his plays and dramatic adaptations, he was the author of *Woffington: A Tribute to the Actress and the Woman* (1888), and various minor articles.

DALY, JOSEPH FRANCIS (1840-). An American jurist, born at Plymouth, N. C. He studied law in New York City in 1855-62, was admitted to the bar in 1862, and from 1870 to 1890 was a judge of the Court of Common Pleas of New York, of which he in the latter year became Chief Justice. In 1896-98 he was a justice of the State Supreme Court and in 1900 was appointed United States Law Commissioner to Porto Rico.

DALY, SIR MALACHY BOWEN (1836-). A Canadian administrator. He was born at Quebec and was educated at St. Mary's College, Oscott, England. He entered the legal profession and was called to the bar in 1864. In 1878-87 he represented Halifax in the House of Commons in the Conservative interest, and in 1882-86 was Deputy Speaker of the House. In 1890 he was appointed Lieutenant Governor of Nova Scotia, and in 1895 he was appointed for a second term, which expired in 1900. He was knighted the same year. He became known as a prominent Imperialist.

DALY, THOMAS MAYNE (1852-1911). A Canadian lawyer and statesman. He was born at Stratford, Ontario, was educated at Upper Canada College, and was called to the bar in 1876. He later entered municipal life and was a member of the Stratford city council and public school board; but removed to Manitoba, and in 1887-96 was a Conservative member of the House of Commons. During 1892-96 he was Minister of the Interior in the administrations of Sir John Thompson and Sir Mackenzie Bowell. During his official term he went abroad on a mission in connection with the reorganization of the Canadian immigration system, in behalf of which he carried into effect important reforms. In 1897 he went to Rossland, British Columbia, where he became police commissioner; and he removed afterward to Winnipeg, where he was police magistrate in 1901-08. In 1909-11 he was judge of the juvenile court in that city. He published *The Canadian Spirit of the North-West* (1907). He was an ardent imperial federationist.

DALYELL, or DALZELL, THOMAS (c.1599-1685). A Scottish general, born at Binns, Linlithgowshire. In 1642 he accompanied Gen. Robert Monro in the expedition to Ireland and fought in 1651 at Worcester and in 1654 in the Highland rebellion. Especially excluded by Cromwell from the Act of Grace, he took service under the Czar of Russia and participated as a general against the Turks and Tatars. In 1666 he was appointed by Charles II commander in chief of the forces in Scotland and was particularly commissioned to repress the Covenanters. His defeat of the Covenanting troops at Rullion Green was followed by cruelties which made his name a byword through the countryside. A stubborn Royalist, he did not, says Creighton, "shave his beard since the murder of King Charles I." In 1681 he enrolled the regiment afterward known as the Scots Greys.

DAM, TINKER'S. A guard of dough or clay placed by a tinker around a cavity to confine the melted metal until it "sets." It is worthless after use; hence the vernacular expression, "not worth a tinker's dam."

DAMA, dā'mā (Lat.). A gazelle (*Gazella dama*) of the Sudan, with short lyrate horns and no dark band on the sides. See *GAZELLE*.

DAMAGES (OF, *damage, damage, Fr. domage, from Lat. damnum, loss*). The pecuniary recompense given by a court of law to one who has suffered an invasion of a legal right through the act of another. The right invaded may be one which the plaintiff enjoys in common with other members of society, as, e.g., his right to have his person or property not interfered with; or his right not to be injured through the negligence of others; or it may be a right which he has acquired through entering into a special legal relation with another, as by contract.

But, although the law furnishes a legal remedy for every violation of a legal right, that remedy is not always an action for damages. The entire jurisdiction of the equity tribunals is concerned with remedies of a different order—as injunction, the specific enforcement of contracts, etc.—the remedy of damages being for the most part left to the courts of common law. Furthermore, not even at common law does every invasion of a legal right give rise to an action for damages. The breach of a condition, e.g., is remediable only by action on the part of the one injured restoring both parties to their former condition. Thus, if the condition was attached to a sale of land or goods, its breach enables the injured party to rescind the transaction and place himself *in statu quo*, but not to sue for damages.

Strictly speaking, the term "damages" is not applicable to all cases of a recovery of money for infringement of legal rights, but only to such as call for an estimate or admeasurement by the court or jury of the injury suffered and of the proper compensation to be made therefor. Where the damages are liquidated, i.e., where the amount to be recovered is fixed in advance by agreement of the parties, they are not damages in the technical sense of the term. Thus, an action to recover the amount payable on a bond, or the amount due for goods sold and delivered, or to recover a sum of money paid to the defendant by mistake, is not an action for damages, but an action to recover a debt. But where the amount claimed is not ascertained, as where an injury has been done to a man's character or property, or in the ordinary case of breach of contract, the action will be to recover the damages suffered through the defendant's wrongful act or default. The complaint or declaration of the plaintiff sets forth an estimate of the damages sustained by him, the amount of which will then be conclusively ascertained by the court or jury (usually the latter) upon principles determined by law.

The principles upon which damages are measured by the courts vary according to the nature of the right infringed and sometimes of the act by which it was violated, and are of a most illogical and unsatisfactory character. To a considerable extent they are still influenced by considerations which belong rather to the conditions and feelings of primitive society than to those which now govern the relations of the parties and the administration of justice. In their origin damages were a pecuniary commu-

tation of the right of private vengeance, and were based not on any principle of restitution, but on that of satisfaction to the injured party. It was a long step towards the orderly administration of justice when the victim of a theft was compelled to rest satisfied with four times the value of the thing taken, instead of scourging the thief and selling him into slavery, as was the law of the Twelve Tables. But the damages so awarded were as clearly vindictive in character as was the harsher penalty of the earlier law, and this vindictive element still survives in the modern law of damages. Thus, it is still the law in England and in many of the United States that a tenant who commits willful waste on the premises shall pay thrice the amount of the damage committed, and that a tenant who refuses to quit after due notice shall thereafter pay his landlord double rent. To the same principle is due the doctrine of aggravation of damages, or "vindictive," "retributory," or "exemplary" damages, which permits a recovery in excess of the actual damage suffered in certain cases of breach of promise of marriage, libel, slander, and seduction. There was abundant justification for furnishing this solace to the vindictive feelings of the injured party in an age when it was necessary to buy him off from a more violent vindication of them, but it is submitted that the survival of this barbarous principle into our milder age cannot be justified.

Obviously, the sound principle for the award of damages is that of restitution rather than of satisfaction—the restoring to the injured party of the property of which he has been deprived, or making to him due compensation for the injury sustained by him—and this principle is generally followed by our law in most actions other than those above referred to. It is expressed in the phrase that damages are limited to the loss which the plaintiff has actually sustained. In practice, however, a more restricted rule is followed, the defendant being liable only for such damages as he did in fact contemplate or which are the natural and probable consequences of his acts, whether contemplated by him or not. This rule is equally applicable in cases of contract and of tort and operates to exclude what are called "remote" or merely "consequential" damages. That, under a perfect system, the latter would also be included in an award of damages can hardly be doubted, but the judicial distrust of the jury, by whom, both in England and America, the award is usually made, has induced the courts to adopt the narrower rule.

Damages are also an available remedy in some cases of injury, even where no actual loss has been sustained. It is the violation of a legal right, and not the detriment or loss resulting therefrom, which furnishes the ground for an action for damages. Such an action, accordingly, is the appropriate remedy in the case of a trespass upon land, an unauthorized interference with a watercourse, and the like, although no injury or serious inconvenience to the tenant or riparian proprietor results. The damages to which the plaintiff is entitled in such a case are not "substantial," but "nominal." And, on the other hand, where loss or harm is sustained, but without the violation of a legal right, the damage is irremediable by any legal process. It is *damnum absque injuria*.

For the measure of damages appropriate to the various classes of rights, see the articles in which those rights and the remedies for their

infringement are considered. See especially CONTRACT; TORT; QUASI CONTRACT; INJURY; LIQUIDATED DAMAGES. Consult: Holmes, *The Common Law* (Boston, 1881); *Essays on Anglo-Saxon Law* (ib., 1876); Lee, *Historical Jurisprudence* (New York, 1900); Arthur G. Sedgwick, *Elements of Damages* (Boston, 1896); id., *Treatise on the Measure of Damages* (8th ed., New York, 1891); Sutherland, *Treatise on the Law of Damages* (3d ed., Chicago, 1903); Mayne, *Treatise on the Law of Damages* (5th ed., London, 1894); Watson, *Treatise on the Law of Damages for Personal Injuries* (Charlottesville, 1901); Harris, *Treatise on Damages by Corporations* (Rochester, 1894).

DAMAN, dā-mān', or Portug. **DAMÃO**, dā-moun'. A fortified seaport and district on the west coast of India, belonging to the Portuguese since 1558. The town stands at the mouth of the Damam River, about 100 miles north of Bombay, and has a good harbor (Map. India, B 4). The neighborhood is well stocked with suitable timber for the building and repairing of ships, which largely employ the inhabitants. Though the land is fertile, it has been little cultivated. The principal crops are rice, wheat, cereals, and tobacco. Damam has important deep-sea fisheries and salt works. It also engages in weaving and dyeing and the manufacture of mats and baskets. There is a scarcity of fresh water. The district is an administrative dependency of Goa. Area of district, 169 square miles. Pop. of district 1910, about 70,000.

DAMAN, dā'mān (Syrian). An old name for the Syrian hyrax (*Procapra syriaca*), the "coney" of Scripture (Prov. xxx. 24, 28, etc.), also called rock rabbit. See HYRAX, and cf. DASSIE.

DAMANHUR, dā'mān-hoor' (Egypt. *Teman-hor*, city of Horus, Lat. *Hermopolis Minor*). A town of Lower Egypt, capital of the Province of Behira (Map. Egypt, C 1). It is situated on the Mahmudieh Canal, and has a cotton gin and considerable commerce in cotton and woolen goods. Pop., 1897, 32,122, 1907, 38,752. Known as Hermopolis Parva, it was the ancient "City of Horus."

DAMÃO. See DAMAN.

DAMAR, or **DHAMAR**, dā-mār'. A town of Yemen, Arabia, situated about 63 miles south of Sana, on the route to Mecca (Map: Arabia, with Turkey in Asia, Q 12). It is situated in the centre of an agricultural district and carries on some trade in horses. Pop. about 20,000.

DAMARALAND, dā-mā'rā-lānd. See GERMAN SOUTHWEST AFRICA.

DAMASCENING. See DAMASKEENING.

DAMASCENUS, NICOLAUS. A Greek historian. He lived in the time of Augustus and Herod the Great, at whose court he spent the greater part of his life. His principal work was a universal history in 144 books, of which only fragments remain. He also wrote an autobiography and a history of the education of the Emperor. Fragments of these works, as of the first seven books of his universal history, are preserved in the collections of Constantinus Porphyrogenitus. Nicolaus was, in philosophy, an adherent of the Peripatetic school and wrote a compendium of Aristotelianism. The historical fragments are edited by Müller, *Fragmenta Historicorum Græcorum*, vol. iii (Paris, 1868-83).

DAMASCIUS (Lat., from Gk. *Δαμάσιος*, *Damaskios*). A Neoplatonic philosopher of the

sixth century A.D. He was born at Damascus and was the last teacher of Neoplatonism (q.v.) at Athens. When the philosophic schools were closed by Imperial edict of Justinian in 529, he, with Simplicius, Diogenes, Priscian, and others, was forced to go to Persia. Of his writings we possess his book *On First Principles*, a discussion of the nature and attributes of God and of the human soul, a commentary to Aristotle, and an extract from his life of Isidorus of Gaza, preserved by Photius. His *On First Principles* was edited by Ruelle (Paris, 1889). Consult Whitaker, *The Neo-Platonists* (Cambridge, 1901).

DAMASCUS (Arab. *Dimshk-ash-Shām*). The largest city of Syria, Asiatic Turkey, and capital of the vilayet of Syria (Map: Turkey in Asia, G 6). It is situated in a plain at the eastern base of the Anti-Libanus, 53 miles south-east of Beirut. The city, with its beautiful surroundings and its abundant supply of water, has since the earliest times been regarded by the Arabs as the most beautiful spot in the world and is supposed to have served as a model for the paradise described in the Koran. The appearance of Damascus from a distance is impressive, but upon a closer inspection it is, like most Oriental cities, disappointing. It is about 5 miles in circumference and is surrounded by partly ruined walls, pierced by seven gates. The streets, with the exception of the "Straight Street," on which St. Paul is supposed to have lived, are crooked and narrow. The houses are generally built in the Moorish style and not infrequently combine a splendidly decorated interior with a plain and sombre exterior. The walls fronting the street are usually without windows; the courts in the houses of the wealthy residents are adorned with splendid marble fountains, fine trees, and flowers. Damascus derives its water supply, by an excellent system of canals, conduits, and pipes, from the Barada, the Abana of the Old Testament, which traverses the city from west to east and divides the newer portion of the city on the north from the ancient walled city with its sectarian quarters on the south. The surrounding plain is rich in vineyards, orchards, and gardens, being well irrigated by the Barada, which, separating into seven branches, loses itself in marshlands about 18 miles east of the city.

Damascus has over 200 mosques. Of the 71 large mosques, that of the Omniads is the most important. It is supposed to have been originally a heathen temple converted into a Christian church at the end of the fourth century. It then contained what was believed to be the head of John the Baptist and was named the church of St. John. The site of the church was later acquired by the sixth Omniad caliph, who erected on it a mosque of fabulous splendor, according to the description of the Arabic writers. After the conquest of Damascus by Timur the mosque was despoiled. It covers a site of 143 × 41½ yards and has the shape of a basilica. It was partially destroyed by fire in 1893, and, though subsequently rebuilt, has lost much of its historical interest. The dome, 120 feet high, is flanked by three minarets, one 250 feet high. Other noteworthy mosques are the Sināfīyah with its striking green-tiled minaret, and the Tekīyah, with its graceful minarets and dome, founded in 1516 on the river bank to the west of the city as a refuge for indigent pilgrims. There are also numerous beautifully ornamented chapels. The chapel of Abraham in the northern

suburb of Burzeh, the leper hospital in the house of Naaman, the house of Ananias, the place of St. Paul's conversion near the east gate, and the point where he was lowered from the walls are traditionally sanctified localities. The English cemetery on the southeast contains the grave of Buckle the historian, who died here in 1862.

Damascus was once a famous seat of learning and contained numerous schools in which grammar, theology, and jurisprudence were taught. The higher schools, with a few exceptions, are now closed, and Damascus as a centre of culture has been surpassed by Cairo. Elementary education is provided to some extent by the missionary schools, and a number of higher schools are conducted by the French orders.

The municipal affairs are administered by a council in which Christians as well as Jewish residents are represented. Damascus is the seat of the governor (*vah*) of the vilayet of Syria and of the commander of the Syrian troops. The chief manufactures consist of silver and gold ornaments, stuffs interwoven with silver and gold threads, brass and copper work, and inlaid furniture. The manufacture of the blades for which Damascus was famous has ceased. The commercial importance of the city rests chiefly on the transit trade, which, however, has considerably declined since the construction of the Suez Canal. The bazaars of Damascus are numerous and well kept, but they are generally poorly stocked, and the magnificent khans formerly thronged by merchants are now but indifferently attended. The exports, which amount to about \$2,000,000 annually, consist chiefly of wool, hemp, grain, and animal products, grapes, and dried fruit. The imports amount to about 4½ million dollars annually and consist chiefly of textiles, sugar, and rice. Damascus is connected by rail with its port, Beirut, and is the northern terminus of the Damascus-Medina line. It is visited monthly by caravans from Aleppo. The population is variously estimated, a figure often quoted being 154,000; a later estimate is 350,000. About three-fourths of the inhabitants are Mohammedans; Jews number upward of 11,000; and the rest are Christians of various denominations. The United States is represented by a consular agent.

Damascus has been thought to be the oldest city in the world. Its foundation is attributed by Josephus to Uz, the son of Aram. The city was the seat of a kingdom at the time of the Hebrew monarchy. Subjugated by David, according to 2 Sam. viii. 5, 6, and 1 Chron. xviii. 5, it soon regained its independence and even recovered sufficiently to attack the Kingdom of Israel, weakened by internal strife. In the second half of the eighth century B.C. Damascus was conquered by the Assyrians, under Tiglath-pileser III, and its inhabitants were carried away to the land of the conquerors and replaced by colonies from Assyria. After the death of Alexander the Great Damascus became part of the Kingdom of the Seleucids. Conquered by Pompey in 64 B.C., it became a dependency of Rome, under which it enjoyed local autonomy and regained a part of its former prosperity. Christianity was early introduced into Damascus (see PAUL), and the city became the seat of a bishopric. In 635 it was taken by the Mohammedans, under whose rule it was for a time (previous to the founding of Bagdad) the residence of the caliphs and was greatly adorned and fortified. After an unsuccessful siege by the Crusaders under Baldwin in 1148, Damascus was

taken by Nureddin in 1164, and, at the death of the latter, passed into the hands of Saladin, who died there in 1193. The victory of Tamerlane over the Egyptians at Damascus in 1401 placed the city in the hands of the Mongol conqueror, who after exacting a large tribute from its residents slaughtered most of them and pillaged and burned the city. It was soon rebuilt and in 1516 was wrested from Egypt by the Turks under Selim I. Retaken by the Egyptians under Ibrahim Pasha in 1832, Damascus remained under the rule of Egypt until 1841, when, together with Syria, it was restored to Turkey. An uprising of the Moslem population in 1860 resulted in the destruction of the Christian quarter and the massacre of about 6000 Christians. Consult: Porter, *Five Years in Damascus* (London, 1870); Macintosh, *Damascus and its People* (ib., 1882); and the article "Damaskos," in Pauly-Wissowa's *Real-Encyclopädie der classischen Altertumswissenschaft* (Stuttgart, 1901).

DAMASCUS BLADE. See DAMASKEENING.
DAM'ASK. A textile with satin, twill, or taffeta figures on satin ground of the same color, the lines of the figures contrasting sharply with the lines of the ground and causing the shifting sheen that marks the appearance of damask as viewed from different angles. In satin damask the figures are in weft satin, the ground in warp satin. Just as tapestry (q.v.) is primarily a wool weave and a weft weave, so damask is primarily a silk weave and a warp weave, the figures of tapestry being formed by the manipulation of the weft on bobbins, the figures of damask by the manipulation of the warp with harness. In damask the weft, being shuttle-thrown the whole width of the warp, is manipulated with difficulty. In tapestry the warp threads, being divided into only two sets—one consisting of the odd threads, the other of the even threads—instead of five or more sets as in damask, permit plain weave only. Damask, then, marks the development of the loom to a point where the warp threads can be freely manipulated to form figures. (See WEAVING.) Most upholstery and drapery silk damasks have the figures in taffeta, giving a bolder contrast than would the finer lines of the weft satin threads. Damasks are also woven in wool, linen, mercerized cotton, and other materials less expensive than silk.

An important class of damasks are those in linen and cotton intended for use as tablecloths and napkins, usually white (the finer grades being woven in the gray and bleached after weaving), but sometimes (especially in the coarse grades and for the cheaper and less civilized peoples) in red or blue. The better grades are made of very fine linen threads woven close, with the warp in eight or more sets, and in patterns that are often most elaborate, picturing architecture and landscapes and human figures, against a comparatively plain or striped ground.

The word "damask" has for generations been so carelessly and incorrectly used that it is still incorrectly defined in almost all books of reference in all languages, and often employed inaccurately in museum labels and catalogues. Perhaps the simplest and most comprehensive, though hardly the clearest, definition would describe damask as *flat-figured satin*.

DAM'ASKEENING, or **DAM'ASCENING**. The art of producing upon ordinary steel certain ornamental appearances resembling those

on the famous Damascus blades. Attention was first drawn to this branch of industry by the Crusaders, who brought from Damascus to Europe many articles made of superior steel, such as sword blades and daggers. These were found to possess not only great elasticity, united with considerable hardness, but their surfaces were covered with beautiful designs, formed by a tissue of dark lines on a light ground, or light lines upon a dark ground, and occasionally by the inlaying of gold on the steel-blue ground. In genuine Damascus blades the designs run through the substance of the blade, and the watering, or regular, almost symmetrical, figuring, is not worn off by friction, or even grinding. Imitations of the watering of Damascus steel are produced on common steel by etching with acids; and in this way landscapes, inscriptions, and ornaments and decorations in general, are imprinted on the steel-blue ground. Gold and silver are also inlaid in the higher class of sword blades and other articles. Gun barrels are occasionally subjected to the process of damaskeening.

DAMASTES, dā-mās'tēz (Lat., from Gk. *Δαμάστος*, *Damastēs*), or **SIGEUM**. A Greek historian, a contemporary of Herodotus. According to Suidas, he wrote a *History of Greece*, a work on the *Ancestors of Those who Warred Against Troy*, and a *Catalogue of Nations and Towns*. Strabo charges him with ignorance and credulity. Consult Müller's *Fragmenta Historicorum Græcorum* (Paris, 1868-83).

DAM'ASUS. The name of two popes.—**DAMASUS I**, SAINT (Pope 366-84). A Spaniard by extraction, he was born in Rome about 305. In 355 he was made archdeacon. On his consecration to the episcopal office he was opposed by Ursicinus, who was the choice of a considerable faction, but finally acknowledged by all. His reign was far from peaceful. It was spent in subduing the still numerous Arians in the West, in combating the heresy of Apollinaris, which he caused to be condemned at the Council of Constantinople in 381, and in defending the cause of Paulinus against Meletius. He was a great friend of St. Jerome and was primarily instrumental in inducing him to undertake the revision of the early Latin texts of the Bible, thus producing the version later known as the Vulgate. His works are in Migne, *Patr. Lat.*, xiii. For his life, consult: Rade, *Damasus, Bischof von Rom* (Freiburg, 1882). Wittig, in *Römische Quartalschrift für christliche Alterthumskunde und für Kirchengeschichte*, 14th suppl. Heft (Freiburg, 1902).—**DAMASUS II** (Pope, for 23 days from July 17, 1048). He was a Bavarian by birth, and Bishop of Brixen, in Tirol, when he was chosen Pope on the nomination of Emperor Henry III. He died in Palestrina, near Rome, Aug. 9, 1048.

DAMBAGE, dām'bāg, Otto (1831-99). A German jurist, born at Querfurt. In 1862 he was appointed Justiciary of the General (now Imperial) Post Office, Berlin. The copyright laws and the postal laws of the Empire were devised chiefly by him. In 1873 he was appointed professor extraordinary of law in the University of Berlin. He wrote: *Fünfzig Gutachten über Nachdruck und Nachbildung* (Leipzig, 1891); *Das Telegrafien-Strafrecht* (2d ed., ib., 1897); *Das Gesetz über das Postwesen des Deutschen Reichs erläutert* (6th ed., ib., 1900).

DAMBUL, dām-būl'. A vast rock temple of the Buddhists in Ceylon, about 40 miles north of Kandy, containing, among a profusion of

carvings, figures of Buddha of extraordinary magnitude.

DAME (OF., Fr. *dame*, from Lat. *domina*, lady, fem. of *dominus*, master, Skt. *damana*, conquering, Lat. *domare*, Gk. *δαμαίνω*, *damainō*, Skt. *dam*, to tame; connected with OHG. *sam*, Ger. *zahn*, Icel. *tamr*, AS. *tom*, Eng. *tame*). A title of honor which long distinguished high-born ladies from the wives of citizens and of the commonalty in general. In the age of chivalry it was customary even for a queen to be so called by her chosen knight ("the dame of his heart," of his thoughts, etc.). Hence, too, the Virgin mother was called in France "Notre Dame" ('our Lady'), as the mother of the whole human race. From *dame*, with the possessive pronoun *ma* prefixed, arose an ordinary title of honor, answering in modern French to the English "Mrs." A daughter of the King of France was called *Madame* as soon as she came into the world; and this was also the sole title of the wife of the King's eldest brother, who was himself known simply as *Monsieur*. In England the word "dame," though not much used, is now applied to married women of all classes. The word "madam" (or "ma'am") is to-day the informal manner of address used in England for the Queen. A curious local usage at Eton College applies the title "dame" to men as well as to women in charge of the boys' boarding houses.

DAME AUX CAMÉLIAS, dām ô kâ'mâ'lyâ', LA (Fr., The Lady of the Camellias). A novel by the younger Dumas (1848), dramatized in 1852. It has been translated under the title *Camille*. The heroine is Marguerite Gautier, a courtesan.

DAME BLANCHE, LA (Fr., The Lady in White). An opera by Boieldieu (q.v.), first produced in Paris, Dec. 10, 1825; in the United States, May, 1831.

DAMEROW, dâ'mc-rô, HEINRICH PHILIPP AUGUST (1798-1866). A German physician, born in Stettin. He studied medicine at the University of Berlin and became professor extraordinary there in 1830. The following years of his life, with the exception of a few years during which he held office in the Ministry of Public Instruction, he spent at Halle as director of a sanitarium for mental and nervous diseases. He is remembered for the important improvements that he introduced in the treatment of insanity and the management of asylums. His published works include the following: *Ueber die relative Verbindung der Irrenheil- und Pflanzanstalten* (1840); *Refeloge, eine Wahnsinnstudie* (1853); *Zur Kretinen- und Idiotenfrage* (1858); *Ueber die Grundlage der Mimik und Physiognomik, als freier Beitrag zur Anthropologie und Psychiatrie* (1860). He was also one of the founders of the *Allgemeine Zeitschrift für Psychiatrie*.

DAMES, dâ'mēs, WILHELM BARNIM (1843-98). A German paleontologist, born in Stolpe. He studied at the universities of Breslau and Berlin, and became teacher of paleontology in Berlin (1878), regular professor (1891), and director (1896) of the department of paleontology at the museum there. Several of Dames's publications, especially those on fossil vertebrates, have been of the greatest importance, nearly all of them having appeared in *Paläontologische Abhandlungen*, issued in Berlin from 1883 to 1886, at which date the place of publication was transferred to Jena. Special features

of his work are his descriptions of the echinoderms of the Jurassic and Tertiary; a memoir on the Jurassic bird *Archaeopteryx*; various publications on the ganoids of the Mesozoic, together with other shorter memoirs on the philogenetic relations of both the invertebrate and vertebrate fossils of Germany. Consult Frech, "Nekrolog an W. B. Dames," in the *Paläontologische Abhandlungen* (Jena, 1900).

DAME SCHOOLS. See COMMON SCHOOLS.

DAME'S VIOLET, *Hesperis*. A genus of plants of the family Cruciferae, containing about 20 species, annual and biennial herbaceous plants, natives chiefly of the middle and south of Europe. The common dame's violet, or white rocket (*Hesperis matronalis*), cultivated in America to some extent, is found in Great Britain in hilly pastures, but has perhaps escaped from cultivation. It has an erect branched stem, with ovate-lanceolate leaves, and terminated by numerous large lilac flowers, which are scentless by day but very fragrant at night, on which account it is often cultivated in flower-pots by ladies, from which custom the plant appears to have derived its common name. The night-scented rocket (*Hesperis tristis*) is a favorite flower in Germany, numerous double, hardy, attractive forms of which are well known.

DAMGHAN, dām-gân'. A town of Persia, in the Province of Semna va Damghan, on the south slope of the Elburz Mountains, 45 miles south of Astrabad (Map: Persia, E 3). It is on the highroad from Khorasan to Teheran, at an altitude of 3770 feet. It was a large city, containing 15,000 houses, in the reign of Shah Abbas, and has a ruined mosque, fine wood carvings, and several minarets of the eleventh century. It has a large export trade in nuts, especially of khaghazi, or thin-shelled almonds, and pecans. The extensive ruins of Hecatompylos lie a few miles to the southwest. Pop. (est.), 10,000.

DA'MI'ANA. See APHRODISIACS.

DAMIANI, dâ'mē-ā'nē, PIETRO (1006?-72). A saint and doctor (1828) of the Catholic church. He was born in Ravenna in 1006 or 1007 and had a sad boyhood through neglect and cruelty. Feeling the call to the monastic life, he resigned a promising career as teacher and became a hermit at Fonte Avellana, near Perugia, in 1035, became prior in 1043, and did much to reform his monastery and to cure the abuses which had crept in. He also threw himself energetically into reform of the clergy throughout the whole church. To these ends he employed his promotion in 1057 to be Cardinal Bishop of Ostia, and his friendship with successive popes. He also endeavored to effect reforms through the German emperors. His efforts were, however, not always successful, as he could not secure the requisite backing; but he prepared the way for the greater reformer, Gregory VIII. He died at Faenza, Feb. 23, 1072. His works are printed in Migne, *Pat. Lat.*, cxlv, cxlv. His *Liber Gomorrhianus* gives a frightful picture of the corruptions of the time. For his biography, consult L. Guérrier (Orleans, 1881); J. Kleiner-mann (Steyl, 1882).

DAMIANISTS, or ANGELISTS. 1. A sect of the sixth century, followers of Damianus, a Monophysite patriarch of Alexandria, who taught that there was only a single substance in the Godhead. 2. A name for the Sisters of St. Clare, a Franciscan order of nuns, which began with the convent of San Damiano, Assisi.

DAMIA'NUS (Lat., from Gk. *Δαμιανός*). A celebrated sophist and rhetorician of Ephesus, who lived about 200 A.D. He taught rhetoric at Ephesus and followed the methods of Adrianus and Elius Aristides, of whom he had been a pupil. Philostratus gives an account of him in his *Lives of the Sophists*.

DAMIANUS. See COSMAS and DAMIANUS. **DAMIEN DE VEUSTER**, dā'myān' de vē-stār', JOSEPH (1840-89). A Belgian priest of the Roman Catholic church, better known as Father Damien, a missionary to the leper settlement of Molokai, Hawaii. He was born near Louvain, studied theology at the university there, entered the Society of the Sacred Hearts of Jesus and Mary in 1863, was appointed to the mission to the Hawaiian Islands. In 1873 he was sent, at his own request, to the Molokai settlement established by the Hawaiian government in 1865 for the enforced segregation of lepers and their maintenance at public expense in the villages of Kalapaupapa and Kalawao. He found the water supply unfit, the food bad, the people ill-washed, ill-clothed, and ill-housed. He improved these conditions, organized religious worship, established schools, erected a general shop for leper trade, lent his own skilled hand to the building of the church at Kalapaupapa, and dug the graves of many of his parishioners. He gradually gathered about him priests, lay brethren, and nuns as associates. In 1884 he perceived in the insensibility of his skin the sign of the approach of the disease and could begin his sermons with the words, "We lepers." He finally succumbed to the concentration of the leprosy in his lungs. His simple, heroic life and death attracted wide notice, and led to agitation by Englishmen of the difficult leper problem in India. Much of his fame is due to Robert Louis Stevenson's *Open Letter to the Reverend Dr. Hyde*, a reply to an attack on Damien by a Presbyterian clergyman. Consult: Stoddard, *The Lepers of Molokai* (Notre Dame, 1885); Father Pamphile, *Life and Letters of Father Damien* (London, 1889), and a biography (1889) by Clifford.

DAMIENS, dā'myān', ROBERT FRANÇOIS (1715-57). A French fanatic, known for his attempt to assassinate Louis XV. He was born near Arras, in France. Opium and accompanying dementia caused him to crown a life of idleness, mischief, and dishonesty with an attempt to kill the King of France. He himself alleged that it was the conduct of Louis towards the Parlement that drove him to the act. The opponents of the Jesuits sought to implicate them in this crime. On Jan. 5, 1757, as the King was entering his carriage, bound for the Trianon, Damiens stabbed him in the side, but not seriously. All the agencies of slow fire, glowing pincers, and boiling oil were visited upon the poor wretch to make him reveal the names of possible accomplices. He confessed nothing, however. He was torn apart by four strong horses, and his remains were burned and his family was driven from France. Consult d'Heilly, *Le Parlement, la cour, et la ville pendant le procès de Robert-François Damiens* (Paris, 1875).

DAMIETTA, dā'mī-ēt'tā (Ar. *Damyāt*, Copt. *Damiati*, Lat. *Tamiathis*). A town of Lower Egypt, situated on the right bank of the eastern branch of the Nile, about 10 miles above its mouth and 125 miles north-northeast of Cairo by rail (Map: Egypt, C 1). It contains a number

of ancient mosques, marble baths, and several bazars. It is the seat of a governor and a Coptic bishop and of a number of European consular representatives. The mouth of the river is closed by a bar which prevents the entrance of large vessels. In former years Damietta was a flourishing manufacturing and commercial centre, with a population of about 80,000. With the opening of the Suez Canal and the rise of Alexandria its commerce declined and its manufacturing industries, with the exception of the weaving of cotton fabrics, have almost wholly disappeared. The exports consist of rice, southern fruits, and fish. Damietta is connected by rail with Cairo and Alexandria and had a population in 1907 of 29,354, including a few foreigners. The existing town was erected about 1260, but prior to that a city of the same name (anciently Tamiathis) stood about 4 miles nearer the sea. It was strongly fortified by the Saracens and formed on that side the bulwark of Egypt against the Crusaders, who, however, succeeded in capturing it in 1219 and 1249. It was razed and rebuilt farther inland, on the site it now occupies, by the Sultan Bibars.

DAMIRON, dā'mērōn', JEAN PHILIBERT (1794-1862). A French philosophical writer. He studied under Burnouf, Villemain, and Cousin, lectured on philosophy in various Parisian institutions, and became professor in the Normal School and titular professor at the Sorbonne. He was one of the founders (1824) of the *Globe*, contributed largely to it, and afterward collected his contributions under the title *Essais sur l'histoire de la philosophie en France au XIX siècle* (1828). His most important works are on the history of French philosophy: *Cours complet de philosophie* (1842); *Essai sur l'histoire de la philosophie en France au XVII siècle* (1846); *Mémoires pour servir à l'histoire de la philosophie du XVIII siècle* (1858-64), and an edition of Jouffroy in which he so edited and changed the original text as to stir up a famous controversy, especially with Pierre Leroux.

DAMJANICS, dām'yō-nits, JOHANN (1804-49). A Hungarian revolutionist, of Servian origin. He entered the Austrian army, in which he rose to a captaincy; was received into the councils of Kossuth in 1848, and, at the outbreak of hostilities, organized a battalion, with which he fought bravely against the Servians. In March, 1849, he took Szolnok and was made general. He fought under Görgei and was placed in command of the fortress of Arad. After the disaster of Világos he surrendered to the Russians, by whom he was turned over to Austria. He was condemned to death and with 12 other generals was hanged by Haynau at Arad.

DAMMAR, or **DAMMAR PINE** (Hind *dāmar*, pitch, resin), *Agathis*, formerly called *Dammara*. A genus of coniferous trees of the araucarian tribe, distinguished by their broad, lanceolate, leathery leaves, which have numerous nearly parallel veins. The name, originally applied to its resinous product, has been extended to a number of different trees, one of which is the Moluccan dammar (*Agathis orientalis*), which grows on the high mountain ridges of the Molucca Islands. It grows to a great height, attains a diameter of 9 feet, and generally has the lower part of the trunk beset with knots as large as a man's hand. The timber is light and of inferior quality, and the tree is chiefly valuable for its resin, which is soft, transparent,

hardens in a few days, and is then white, with a crystalline appearance. The resin often flows spontaneously from the tree in such quantity that it hangs in masses like icicles of a hand-breadth and a foot long. At another period of the year it is yellow and less valued. By incision, especially in the protuberances, of the stem, it is obtained in large pieces. So long as dammar resin is soft it has a strong smell; upon drying this odor is lost. It contains only a trace of volatile oil, but consists of two distinct resins, one of which is soluble in alcohol, the other not. It is light, brittle, and easily friable, readily soluble in oil of turpentine. It is used in Asia for domestic purposes, and in the arts like other resins; it is an article of commerce, and in Europe is employed in various ways to form varnishes, which dry quickly, have a very bright lustre, are colorless, but readily become viscid again, and are not permanent, so that this resin cannot be made a substitute for copal and amber. It is almost completely soluble in benzole and in this solvent makes an excellent colorless varnish for positive photographs on glass. To this genus belongs also *Agathis australis*, the Kauri pine (q.v.) of New Zealand, which produces the resin known as Kauri resin, or Kauri gum. The tree attains a height of 80 to 100 feet and a diameter of 16 feet. The timber is straight-grained and very durable. The Kauri resin is dug in waste places where there were Kauri forests in the past, whence the trees have long since disappeared through fire, etc. This gum is fossilized. *Agathis robusta* is a valuable Queensland tree. The resin known as black dammar is obtained in the Molucca Islands from the trunk of *Protium obtusifolium*, a tree of the family Burseraceæ. It is a semifluid, strong-smelling resin, which becomes black when dry; it is used as pitch, also to yield a kind of turpentine, which is obtained by distillation. *Canarium microcarpum* and *Canarium strictum*, trees of the same family, also natives of the farthest East, yield by incision of the trunk a viscid, odorous, yellowish substance, very similar to balsam of copaiba, which is called damar, or dammar, and is used in naval yards, mixed with a little chalk and the bark of reeds, for calking boats. The resin called white dammar, or piney dammar, in India, often also called copal in India, is the product of *Vateria indica* and related species, large trees of the family Dipterocarpaceæ. It is obtained by wounding the tree, and when fresh is clear, fragrant, and acridly bitter; when dried, it becomes yellow, brittle, and glasslike. It is used in India as a varnish ("piney varnish") which is hard, tenacious, and much esteemed. It is also made into candles in Malabar, which, in burning, diffuse an agreeable fragrance and give a clear light with little smoke. *Shorea robusta*, the Sal (q.v.), so much valued in India as a timber tree, of the same natural order, and some other species of *Shorea*, yield a resin, also known as dammar and as rai and dhooana, which is much used in dockyards in India as pitch. For illustration of *Agathis dammara*, see PLATE of DAHLIA, etc.

DAMMARA. See KAURI PINE.

DAMMARTIN, dâ'mâr'tân'. A family of distinguished French architects of the late fourteenth and early fifteenth centuries.—ANDRÉ DAMMARTIN was architect of the Chartreuse, near Dijon (1383), in the service of the Duke of Burgundy.—GUY DAMMARTIN was architect

of the Duke de Berri. Both were engaged on the Old Louvre and died about 1400.—JEAN DAMMARTIN was employed (1421-32) in the construction of the great cathedrals of Le Mans and Tours, completing the north transept of the former and the nave of the latter of these cathedrals.

DAMNATION DE FAUST, dâ'nâ'syôn' de fôst, LA (Fr., The Damnation of Faust). The title of a symphony cantata by Berlioz, first produced in Paris, Dec. 6, 1846; in the United States in 1880 (New York).

DAMOCLES, dâm'ô-klez (Lat., from Gk. Δαμοκλῆς, *Damoklêes*). A courtier and sycophant of the elder Dionysius, the tyrant of Syracuse. When Damocles lauded the lot of royalty, Dionysius, to set him right, invited him to a luxurious banquet. On looking upward, he saw a keen-edged sword suspended over his head by a single hair, and at once changed his views concerning the happiness of kings. Consult Horace, *Odes*, iii, 1, 17 ff.

DAM'ODAR. A river of India, rising in Ramgarh, in Bengal, and, after a generally southeasterly course of 350 miles, entering the Hooghly from the right, below Calcutta (Map: India, E 4), draining an area of 248 square miles. The valley of the Damodar, traversed by the East Indian Railway, abounds in coal and iron. It is navigable from the mouth of its chief tributary, the Barakhar, which flows into it from the north. It is the sacred river of the Santals of Hazaribagh.

DAMON, DER. An opera by Rubinstein (q.v.), first produced in St. Petersburg, Jan. 25, 1875.

DAMON, ISAAC (?1780-?1840). An American architect of the early nineteenth century, a pupil of Ithiel Town (q.v.), and the designer of many churches, houses, and public buildings in Springfield, Northampton, Lenox, and other Massachusetts towns.

DAMON AND PHILTIDA. A mock pastoral in dramatic form by Cibber (1729), published anonymously.

DAMON (Lat., from Gk. Δάμων) **AND PHINTIAS** (Lat., from Gk. Φιντίας), less correctly PYTHIAS. Two Pythagoreans of Syracuse, models of faithful friendship. When Phintias was condemned to death by Dionysius, the Tyrant of Syracuse, he begged to be allowed to go home, to arrange his affairs, and Damon pledged his own life for the reappearance of his friend. Dionysius consented, and Phintias returned just in time to save Damon from death. The tyrant pardoned Phintias, and desired to be admitted to fellowship with the friends. Consult: Plutarch, *De Amicitia*; Valerius Maximus, iv, 7; Cicero, *De Officiis*, iii, § 45.

DAM'OPHON (Lat., from Gk. Δαμόφων). A brilliant, erratic Greek sculptor of Messene, whose works, statues of gods in temples, were found chiefly at Messene, Megalopolis, and Lycœura. He was skilled enough in chryselephantine technique to be called upon to repair the statue of Zeus by Phidias at Olympia. His date is uncertain. Frazer, in his *Pausanias*, iv, 372-379, puts him in the fourth century B.C. Dickens, *Annals of the British School at Athens*, xii, xiii, assigns him to the second century B.C.: so too Ida C. Thallon, "The Date of Damophon of Messene," in *The American Journal of Archaeology*, 2d series, x (1906). For a good account of Damophon's work, consult E. A.

Gardner, *A Handbook of Greek Scripture* (London, 1911).

DAMOXENUS (Lat., from Gk. Δαμοξένος). An Athenian comic poet. Two of his plays, *The Foster-Brothers* (Συρρεποί) and *The Self-Tormentor* (Ἐαυτὸν Ἠερῶν), are mentioned by Suidas and by Athenæus, who quotes a long passage from the former and a few lines from the latter work. Consult Meineke's *Fragmenta Comicorum Historicorum*, vol. iv (1839-57).

DAMPER. 1. A door or valve which, by sliding, rising and falling, turning on a hinge, or otherwise, diminishes the aperture of a chimney or air flue; this lessens the quantity of air that can pass through a furnace or other fire and thus "damps" or checks the combustion. The damper of a pianoforte is that part of the mechanism which, after a key is struck, and the finger is lifted up from the key, immediately checks or stops the vibration of the string. It consists of a second hammer, which, on the rising of the key, strikes the string and remains upon it instead of bounding off as the sounding hammer does. 2. Damper is also the name given in Australia to a simple kind of unleavened bread formed of wheat flour. It is made while traveling in the bush and baked among the ashes of a fire.

DAMPIER, dām'pēr, WILLIAM (1652-1715). An English freebooter and explorer. He early went to sea with a party of buccaneers, crossed the Isthmus of Panama in 1679, and embarked on the Pacific with a considerable force in canoes and similar small craft, and captured several Spanish vessels, in which he cruised along the coast of Spanish America, waging war on Spanish subjects. In 1684 he engaged in another buccaneering expedition with Captain Cook, in which he coasted along the shores of Chile, Peru, and Mexico. After Cook's death he sailed with Captain Swan to the East Indies, touching at Australia and stopping six months in the Philippine Islands. In desperation Dampier and the majority of the crew left Swan and 36 others marooned in the islands where they might continue their orgies. In 1688 Dampier was himself marooned at his own request in the Nicobars. After great hardships he was again in England in 1691, where in 1697 he published an interesting account of the expedition, entitled *A New Voyage Round the World*. He was afterward (1699) deputed by the government to conduct a voyage of discovery to the South Seas, during which he explored the west and northwest coasts of Australia and the coasts of New Guinea, New Britain, and New Ireland, giving his name to the Dampier Archipelago and the Dampier Strait. In 1703-07 he made his third, and in 1708-11 his fourth, trip around the world, the last time as pilot of the privateer *Duke*, which returned with specie and merchandise to the value of nearly £200,000. He also published: *A Discourse of Winds* (1699); *A Vindication of the Voyage to the South Sea in the Ship St. George* (1707); *Voyages to the Bay of Campechy* (1729).

DAMPIER ARCHIPELAGO. A group of high rocky islands, extending about 40 miles east-northeast and west-southwest, off the northwest coast of Australia, between lat. 20° and 21° S. and long. 116° and 117° E. (Map: Western Australia, C 5). Rosemary, the outer island of the group, is distant 12 miles from the mainland.

DAMPIERRE, dām'pyär', ARGUSTE HENRI MARIE PICOT, MARQUIS DE (1756-93). A French

general. He was born in Paris and entered the military service at the age of 16. After the battle of Valmy (Sept. 20, 1792) he was made general of division, and he contributed largely to the victory of Jemappes (November 6). He was in command of the centre at Neerwinden (March 18, 1793), where he stood his ground until the retreat of the left wing of the army. After the defection of Dumouriez to the Austrian ranks he assumed supreme command. He was mortally wounded, May 8, 1793, while leading the attack on the intrenchments of the Allies near the city of Condé.

DAMPIER STRAIT. 1. A strait, 35 miles wide, separating the island of Waigiu from western New Guinea (Map: East Indies, H 5). It offers one of the safest channels from the Indian to the Pacific Ocean. 2. A strait separating New Pomerania from Rook Island, east of New Guinea (Map: East Indies, J 2).

DAMPING OFF. A fungus disease of plants induced by an excess of moisture in the soil and atmosphere. Young seedlings in hothouses and hotbeds are particularly liable to it. Although the cause is sufficiently obvious, prevention is not always easy: not only because some plants are very sensitive to moisture, but also because the necessity of keeping sashes closed on account of temperature often stands in the way of the ventilation which would otherwise be desirable, and it is when a moist atmosphere stagnates around them, and the temperature is not very low, that plants are most liable to damp off.

The excessive moisture of soil and atmosphere gives the proper conditions for the development of the fungus *Pythium debaryanum*, which is the most common cause of damping off. It is a soil fungus that lives on decaying vegetation until the conditions are right for attacking seedlings. If examined, the seedlings will be seen to show weak, thin spots near the surface of the soil, and on account of this weakening the plant falls over and dies. The disease spreads with great rapidity in the seed bed, so that in a few days all the plants may be reduced to a rotten mass. This fungus attacks many kinds of plants in the open ground, among which are mustard, cress, spurry, maize, clover, lettuce, eggplant, peppers, cucumbers, melons, and forest-tree seedlings. Drying or freezing does not destroy the fungus or its spores. The best precautionary measures are to avoid infested soil, sow thinly, ventilate freely, shade little, water sparingly, and burn all diseased plants.

Damping off is also caused by species of *Rhizoctonia*, *Sclerotinia*, *Phoma*, *Phytophthora*, etc., the general symptoms and conditions applying to all.

DAMBOSCH, dām'rōsh, FRANK HEINO (1859-). A prominent American musician, a son of Leopold Damrosch. He was born in Breslau, where he received his musical instruction from Pruckner and Vogt. In 1871 he came to New York and continued to study with Von Inten and his father. From 1885 to 1891 he was chorus master of the Metropolitan Opera House. In 1892 he organized the People's Singing Classes in New York. (See CHORAL SOCIETIES.) In 1893 he established the Musical Art Society, and in 1898 the Symphony Concerts for Young People. In 1898 he also succeeded his brother Walter as conductor of the Oratorio Society, which he directed until 1912. In 1897-1905 he was director of music in the public schools of New York, which position he resigned to become

the director of the newly established Institute of Musical Art.

DAMROSCH, LEOPOLD (1832-85). A German-American musician, violinist, composer, and conductor, born in Posen, Prussia, Oct. 22, 1832. His parents chose the profession of medicine for him, and after graduating at the University of Berlin he returned to Posen to practice; but his passionate love of music, which he had continued to study incidentally, prevailed, and in 1854 he abandoned medicine for the study of counterpoint and composition under Hubert, Ries, and Dehn. In 1855 he started out as a concert violinist in Magdeburg, became acquainted with Liszt, and under his influence began to write for the *Neue Zeitschrift für Musik*. He was director in Posen and in Breslau, and in 1871 came to New York as director of the Arion Society. The credit of firmly establishing choral organizations in New York belongs entirely to Damrosch. He founded the Oratorio Society (1873) and the Symphony Society (1877) and organized several large musical festivals. All these played a most important part in the musical life of New York City. But the most brilliant achievement of his life was the successful establishment, in 1884, of German opera in New York City, at the Metropolitan Opera House, notwithstanding the obvious difficulties of the undertaking. Among the operas given, *Fidelio*, *Tannhäuser*, *Lohengrin*, and *Die Walküre* were the most important as comparative novelties. He died in New York, Feb. 15, 1885, and imposing funeral services were held in the Opera House. His works comprise several cantatas, a festival overture, violin works (including a concerto in D m.), and songs.

DAMROSCH, WALTER JOHANNES (1862-). An American musician, son of Leopold Damrosch, born in Breslau, Prussia, Jan. 30, 1862. Even before he came to the United States, in 1871, he had studied piano and harmony with his father and F. Draeseke. In New York he continued his studies with Von Inten, Boekelmann, and Pinner. He was made conductor of the Harmonie Society of Newark, N. J., in 1881, and organist of Plymouth Church, Brooklyn, in 1884. In 1885 he succeeded his father as conductor of the Oratorio and Symphony societies, and became assistant conductor of German opera at the Metropolitan Opera House, New York. In 1894 he organized the Damrosch Opera Company, which he directed for five seasons, giving German opera, chiefly Wagner, in the principal cities of the United States. For two seasons (1900-02) he conducted the German operas at the Metropolitan Opera House. For the season of 1902-03 he was the conductor of the Philharmonic Society. In 1903 he completely reorganized the New York Symphony Society as a permanent orchestra. He wrote two operas, *The Scarlet Letter*, produced in 1896 in Boston by his own company, and *Cyrano de Bergerac*, produced at the Metropolitan Opera House in 1913; also a *Maria Te Deum* (1898), a sonata for violin and piano, and a number of songs. In 1914 Columbia University conferred on him the degree of Doctor of Music.

DAMS AND RESERVOIRS. A dam is a barrier built across a stream or across a valley or other depression, to raise the level of water or to retain or store water for the supply of cities, towns, or villages, for irrigation, hydraulic mining, power, navigation, or manufacturing purposes. A reservoir is a basin or other recep-

tacle used for receiving, storing, or distributing water. Reservoirs are often, but by no means always, formed by a dam connecting the banks of a stream or the sloping sides of a valley, canyon, or some more basin-like depression. The terms "dams" and "reservoirs" are used in speaking of devices to confine substances other than water; as when clay is used to hold back molten metal of any sort, or as in dentistry, where a dam is built by a dentist to keep saliva out of a cavity, or when a receptacle is attached to a stove, lamp, or machine for heating or storing water, oil, or other liquids, prior to or during use. The dams and reservoirs considered below will be only those constructed to retain water.

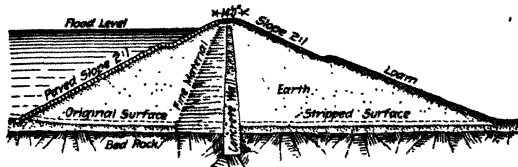
DAMS

Where earth could not be used, the choice of materials until about the close of the nineteenth century was between timber, timber and loose stone, and some kind of masonry or, rarely, steel. Since then many dams of concrete masonry reinforced by steel have been erected. Of course the greatest care must be taken to provide against dam failures, for which there are the following common causes: (1) by sliding on the base or on some horizontal joint; (2) by overturning; (3) by fracture due to tension; (4) by crushing, in the case of masonry dams; (5) by erosion, in the case of earth, or, though rarely, by breaking up and washing away, from the top downward, in the case of masonry structures. After a good site has been chosen and the utmost care devoted to the construction of the foundations and the supervision of the material and workmanship, the chief factor of safety in dam construction is obtained by placing a sufficient volume and weight of material in the dam itself to withstand the pressure upon it. This pressure is directly proportioned to the height of water behind the dam and not to the total volume, as is sometimes supposed. In well-designed earth dams the cross section is so great, for other reasons, as to give a weight far in excess of that which could be removed by the pressure of the retained water. But in masonry dams the cross section may be proportioned to resist the pressure with mathematical nicety, allowing, of course, the factor of safety common to all good engineering work.

A most essential feature in the design of dams of all classes is ample provision for passing waste or flood water. Otherwise the increased pressure against the up-stream face of the dam due to the excessively high water in the reservoir, or else the force of the current in passing over the top of the dam, may cause a serious rupture. In overflow dams relief may be obtained, in some cases, by providing floodgates at one end of the structure, either connected with or detached from the main dam; by having a crest to the whole dam which can be dropped in time of floods (see *movable dams*, below); or, in connection with one or both of the foregoing precautions, there may be an artificial overflow or waste channel leading from a spillway above or at one side of the dam down to the natural channel of the stream some distance below. Such a spillway and overflow channel are essential to all earth dams. It should also be noted that waste gates, or under sluices, are sometimes provided beneath the crest of masonry dams, particularly in India. These may be placed near the bottom of the

reservoir to permit washing out deposits of silt. Where no other means are feasible, waste water may be carried to a point below the dam through a tunnel cut in the solid rock at one side and beyond the structure itself.

Earth Dams are usually formed by depositing the natural soil from the vicinity of the site in thin successive layers and carefully rolling or otherwise rendering compact each layer



CROSS SECTION OF EARTH DAM,
with concrete heart wall and upper slope paved; Metropolitan Water
Works, Southboro, Mass.

before another is added. Water is sometimes applied to the earth to help compact it. Soil that will compact readily and be as little porous as possible should be selected, but it is difficult and generally impracticable to make earth dams impervious to water. Since continuous percolation through an earth dam would lead to its ruin, it is customary, where an attempt is not made to secure imperviousness through the whole structure, to place a water-tight barrier either on the upper face of the dam or at its centre. The former is known as a lining and the latter as a heart or core wall. Both a lining and a heart wall may be used. Heart walls may be composed of a carefully selected mixture of clay and loam or sand, called puddle, of concrete; or of stone masonry plastered with cement. One of the advantages of the heart wall is that it can be carried well into the bed and banks of the valley, beneath and beyond the main part of the dam, which is a great safeguard against leaks between the natural ground and the artificial structure. Whether or not the upper face of the dam is lined to prevent leakage, it must be paved with stone, concrete, or brick to prevent damage to the earth slope by the action of the waves at the water level, which latter varies with the fullness or depletion of the reservoir. Where a water lining is desired, puddle is generally employed, often with concrete or masonry above it. Asphalt has sometimes been used to supplement concrete, brick, or stone lining. Occasionally the lower slope of earth dams is paved; in high dams it is frequently built with a level place, or *berm*, part way up its height. Water is rarely allowed to come within 5 feet of the top of earth dams or reservoir embankments, and it may be kept even lower. The minimum advisable thickness of the base will increase with the height of the dam and the gentleness of the slopes. The angle of repose, or natural slope, of ordinary earth, dumped in banks, gives a base of $1\frac{1}{2}$ feet to 1 foot of height, but wet earth has a less angle of repose. It is common, therefore, to give dams of ordinary earth a slope of 2 to 1 on the lower or dry face, and $2\frac{1}{2}$ or 3 to 1 on the wet face, and even these figures may be exceeded. Some earth dams are backed with loose stone or rock, to give greater stability. In some cases the material composing earth dams is brought into place by means of flowing water, instead of by carts,

scrapers, or buckets, running on and dumped from a cableway. *Hydraulic-fill dams* is the name applied to this rather novel class of structures. This process was used to build a part of the San Leandro and Temescal dams of the water works supplying Oakland, Cal., and also in building earth dams at La Mesa and San Joaquin (Lake Christine), Cal., Tyler, Tex., and the two Necaxa dams in Mexico, the latter

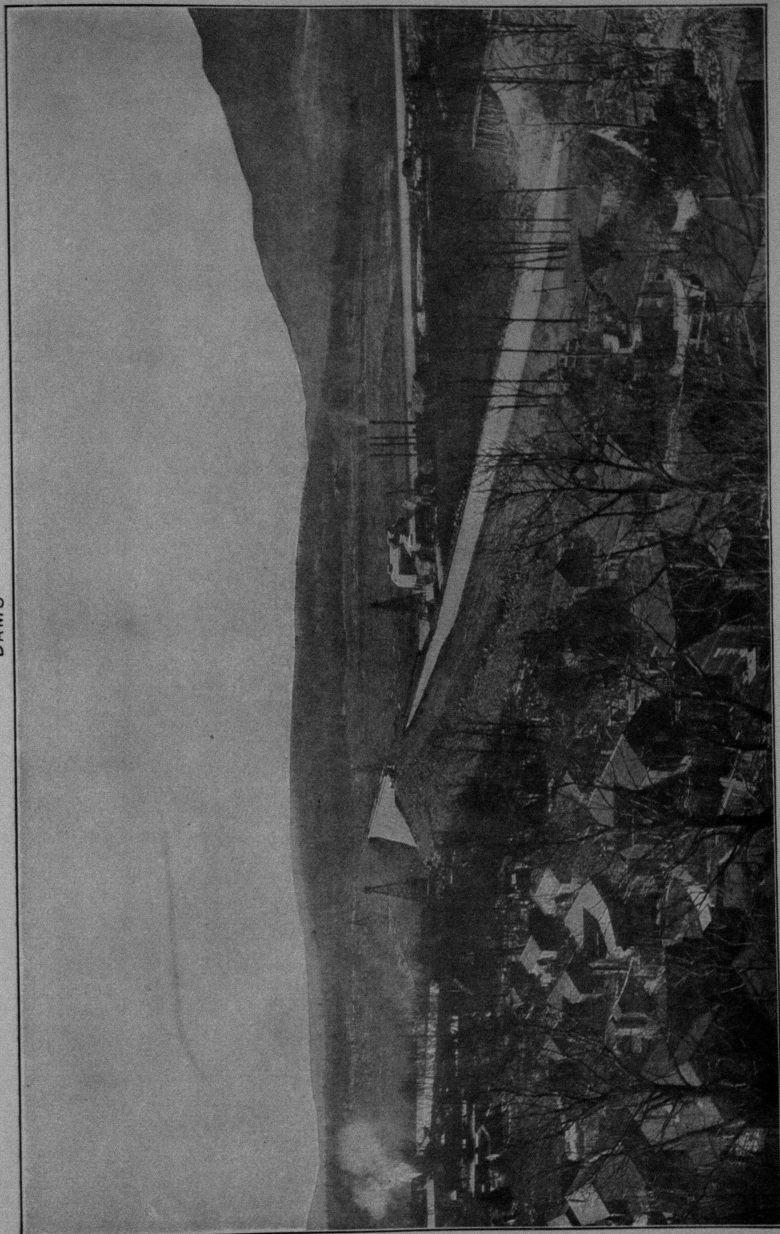
being 190 and 175 feet, respectively, in height. Earth dams vary in height from a few feet to 100 feet or more, and in length from a few score to thousands of feet, or even to miles, although most of the structures running into miles are more properly called reservoir embankments. The San Leandro Dam (water works of San Francisco, Cal.) has a total height of 158 feet from the lowest point of the foundation to its crest

and has no heart wall; it extends 125 feet above the original surface. The Taboada Dam, near Jackson, Cal., completed in December, 1901, has its crest 123 feet higher than the natural surface of the ground at the toe of the lower slope, which is of course some distance down stream from the crest. The crest of the Taboada Dam is 120 feet above rock foundation and 110 feet above the natural surface of the ground, both distances measured in a direct vertical line. The Taboada Dam has no heart wall. See *Engineering News*, July 10 and Sept. 11, 1902, for illustrated descriptions of the Taboada and San Leandro dams respectively.

A recent example of a high earth dam built in layers is the Goose Creek Dam of the Oakley Irrigation project, about 30 miles east of Twin Falls, Idaho, completed early in 1913. It is 145 feet high from the creek bottom to its crest, 1025 feet long and 750 wide or thick at the base, has slopes of 3 to 1 on the up-stream and 2 to 1 on the down-stream face, and contains about 1,100,000 cubic yards of earth, 65,000 cubic yards of rock for riprapping the slopes, and 6200 cubic yards of concrete for the heart wall. The larger part of the earth composing the dam was lifted by steam shovels into dump cars, hauled half a mile to a loading hopper, from which it was passed in succession over three belt conveyors, 1830 feet in total length, one on a 16 per cent grade. The last conveyor discharged into a storage bin, from which the dirt was loaded into wagons for dumping on the dam. Plows and scrapers leveled the dirt into 6-inch layers, which were then sprinkled and rolled. The dam has a reinforced-concrete heart wall only 1 foot thick down to 9 feet above the natural ground surface. From this point a 3-foot concrete wall is carried 49 feet to bed rock.

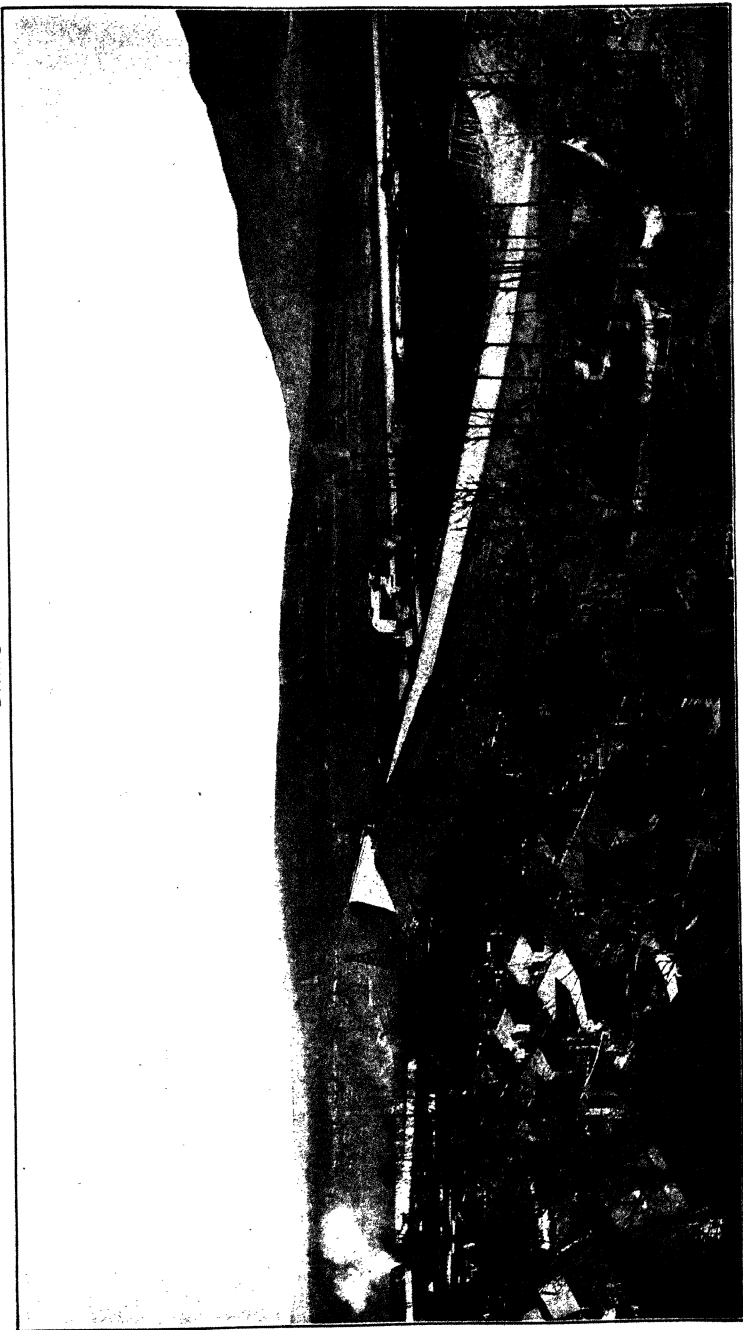
The Gatun Dam across the Chagres River on the line of the Panama Canal (q.v.) was constructed in large part by the hydraulic-fill method. Its earth portion is about 115 feet high and about $1\frac{1}{4}$ miles long, separated into two parts by a spillway channel and dam. The earth portion of the dam has its base at about sea level. Here the dam is 2019 feet thick. At the normal water line, 85 feet higher, the dam is 390 feet thick, and at the top its thickness is 100 feet. The purpose of these unusual dimensions and of the very flat slopes of 4 to 1 above

DAMS



THE OLIVE BRIDGE DAM OF THE CATSKILL WATER SUPPLY, NEW YORK FORMING THE ASHOKAN RESERVOIR
THE PHOTOGRAPH, FROM LEFT TO RIGHT, SHOWS THE CONSTRUCTION CAMPS, THE OLIVE BRIDGE DAM WITH COMPLETED SOUTH WING AND MASONRY
PORTION, THE COMPLETED CORE WALL OF THE NORTH WING, THE MAIN MIXING PLANT, AND THE SURFACE OF WATER IN THE WEST BASIN OF
THE RESERVOIR

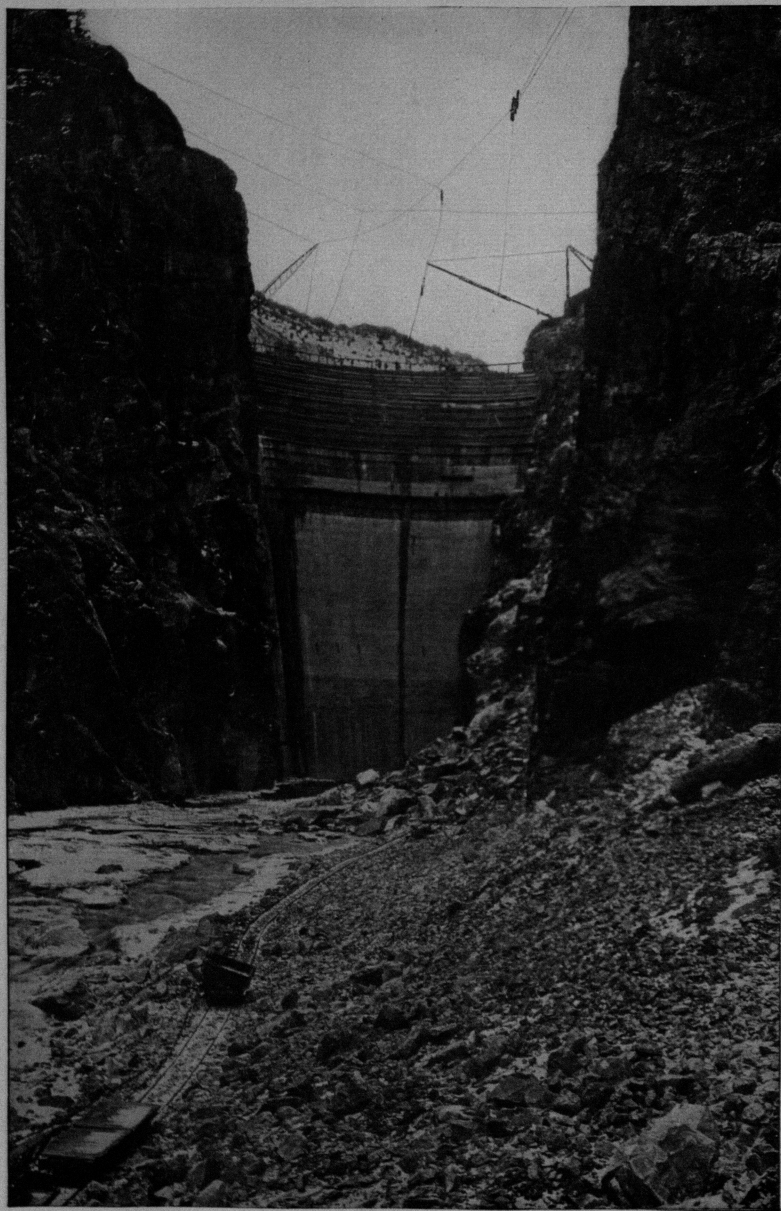
DAMS



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DAMS



SHOSHONE DAM

HEIGHT 328 FEET

COMPLETED JANUARY 20, 1910

cement mortar is used to bind the stones in one homogeneous mass, or the dam may be composed of irregularly shaped masses of stone with the intervening spaces filled with concrete, or it may be made of concrete alone. (See CONCRETE.) Overturning is guarded against by giving the structure such a cross section that the lines of pressure will be thrown within the centre third of the dam. To provide against crushing, a material with high resistance to such action is selected, and the structure is so proportioned that its own weight will not crush the material

give a broader base, and in having the extreme upper part built with nearly parallel sides, while the top is flat, or perhaps more or less rounded. While some of the early dams were quite bold in cross section, most of them were far otherwise.

Up to the time of its completion, in 1907, the highest masonry dam in the world was the New Croton Dam, built in connection with the New York City water supply to secure an increased storage reservoir capacity of about 32,000,000-000 gallons of water. It is located on the Croton

HIGH MASONRY DAMS OF THE WORLD (FROM WEGMANN'S "DAMS")

Dam	Location	Date of construction	Depth of water	Height above bedrock	Width		Length on crest	Plan
					Top	Base		
1 Alicante	Spain	1579-94	127	135	65.6	110.6	190	Curved
2 Puenteas * . . .	"	1785-91	154	164	35.7	144.3	925	Polygonal
3 Val de Inferno . .	"	1785-91	120	118	41.1	137.0	330	"
4 Zola	France	About 1843	120	123	19.0	41.8	205	Curved
5 La Zoya	Spain	1852	94	105	22.0	128.0	238	Straight
6 Purenas	France	1862-66	164	171	9.9	161.0	328	Curved
7 Ternay	"	1865-68	113	125	13.1	81.7	....	"
8 Habra f.	Algiers	1865-73	117	125	14.1	95.0	1476	Straight
9 Ban	France	1867-70	138	157	16.4	127.0	....	Curved
10 Gileppe	Belgium	1869-75	143	154	49.2	216.5	771	"
11 Villar	Spain	1870-78	162	170	14.8	154.5	546	"
12 Pas du Riot . . .	France	1872-78	....	113	....	....	....	"
13 Poona	India	"	....	108	13.8	60.8	5136	Polygonal
14 Hiyar	Spain	1880	....	141	16.4	147.0	236	Curved
15 Garsente	Italy	1880-83	121	126	13.1	96.6	492	"
16 Lagolungo	"	About 1883	....	144	16.4	....	....	"
17 Gran Chemfaa . .	Algiers	1882-84	....	131	13.1	134.5	509	Straight
18 Hanriz	"	1885	115	135	16.4	91.2	532	"
19 Vyrrwy	England	1882-89	....	146	20.0	117.8	1350	"
20 Tansa	India	1886-91	....	118	12.0	100.0	8800	"
21 San Mateo	United States	1887-89	....	170	20.0	176.0	700	Curved
22 Tache	France	1888-92	....	161	13.1	....	....	"
23 Bhatgur	India	"	....	130	12.0	74.0	4067	"
24 Beetaloo	"	1888-90	....	110	14.0	110.0	580	Curved
25 Penar	"	1888-97	....	180	12.0	136.0	1200	Straight
26 Mouche	France	About 1890	95	101	11.5	....	1346	"
27 Lagrange	United States	1890	....	125	24.0	90.0	320	Curved
28 Tiscus	"	1890-95	....	135	18.0	75.0	534	Straight
29 Hernet	"	1891-95	....	136	10.0	100.0	....	Curved
30 Butte City	"	1892	....	120	10.0	83.0	350	"
31 New Croton	"	1892-1907	150	297	22.0	206.0	2188	Straight
32 Echapre	France	1894-98	116	121	17.0	88.6	541	Curved
33 Cotatay	"	1900-04	121	144	16.7	....	509	"
34 Lake Cheshman . .	United States	1900-04	....	222	18.0	176.0	....	"
35 Spier Falls	"	1900-05	80	154	....	....	1369	Straight
36 Boonton	"	1900-05	105	114	17.0	77.0	2150	"
37 Wachusett	"	1900-06	....	228	25.8	187.0	1476	"
38 Ondenon	France	1901-04	107	123	15.4	93.8	420	Curved
39 Urit	Germany	1901-04	....	180	18.0	165.7	1087	"
40 Komotau	Austria	1901-04	....	139	13.1	96.4	809	"
41 Cher	France	About 1907	....	154	15.4	141.1	323	"
42 Cataract	Australia	1902-08	150	192	16.5	168.0	811	Straight
43 Roosevelt	United States	1905-11	240	280	16.0	170.0	1080	Curved
44 Pathfinder	"	1905-10	....	206	10.0	94.0	425	"
45 Shoshone	"	1905-10	....	324	10.0	106.0	....	"
46 Cross River	"	1905-10	106	70	23.0	....	772	Straight
47 Croton Falls	"	1906-11	97	173	23.0	127.7	1100	"
48 Olive Bridge	"	Under construc	210	252	26.33	200.0	1000	"
49 Assuan Dam	Egypt	Raised 1907-11	82	112	36.0	....	6200	"

* Ruptured on April 30, 1802.

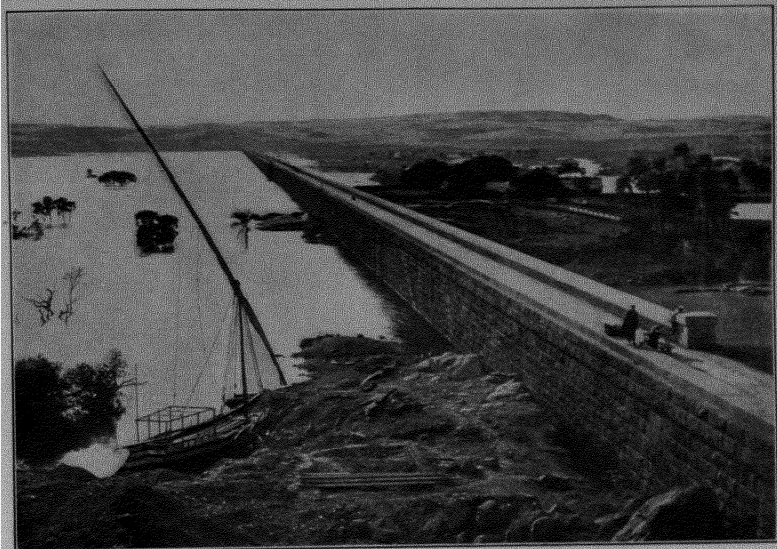
† Failed in December, 1881.

in its lower part. As a general rule, the pressure should never exceed 15 tons per square foot, and with some materials it may need to be as low as six tons. Obviously the only way to prevent excessive or crushing pressures at the bottom of very high dams is to diminish the thickness as the height increases. The action of ice and of the actual or possible current of overflowing water renders it necessary to make the top of the dam thicker than would be required to resist water pressure alone; otherwise the dam might be tapered to a knife edge at the top. The common type of cross section for high masonry dams approaches a right-angled triangle, with the perpendicular side upstream, but it varies from a real triangle in having both sides curved somewhat, particularly so as to

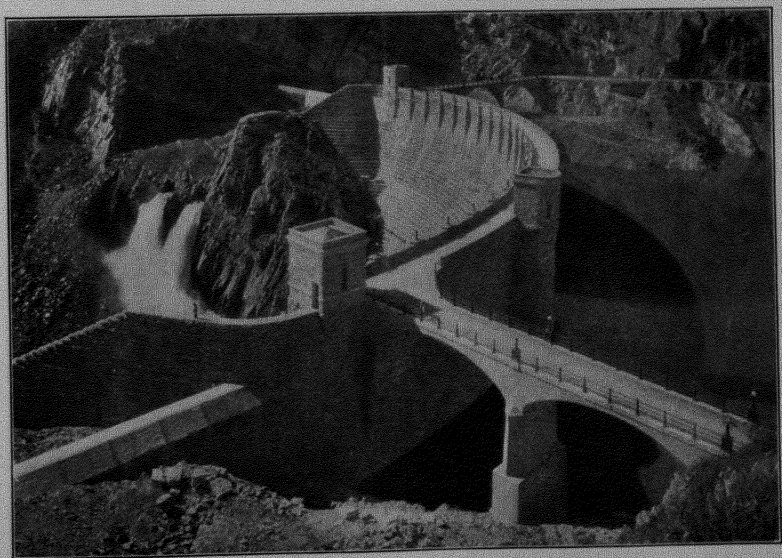
River about $3\frac{1}{4}$ miles from its junction with the Hudson River and has a maximum height of 297 feet and a crest length of 2168 feet. The spillway is at one end of the dam and has a channel 1000 feet long, 50 feet wide at its upper end, and 125 feet wide where it meets the top of the dam. There is a roadway on top of the dam, and a bridge spans the spillway.

The highest dam actually completed up to 1914 in any part of the world was the Shoshone Dam, in Wyoming, which has a maximum height of 328.4 feet above the lowest point in the foundation. The dam was built by the United States Reclamation Service in 1905-10 and forms a 148,500,000,000 gallon reservoir to store water for irrigation. It was built across the Shoshone River, near Cody, Wyo., in a deep narrow can-

DAMS

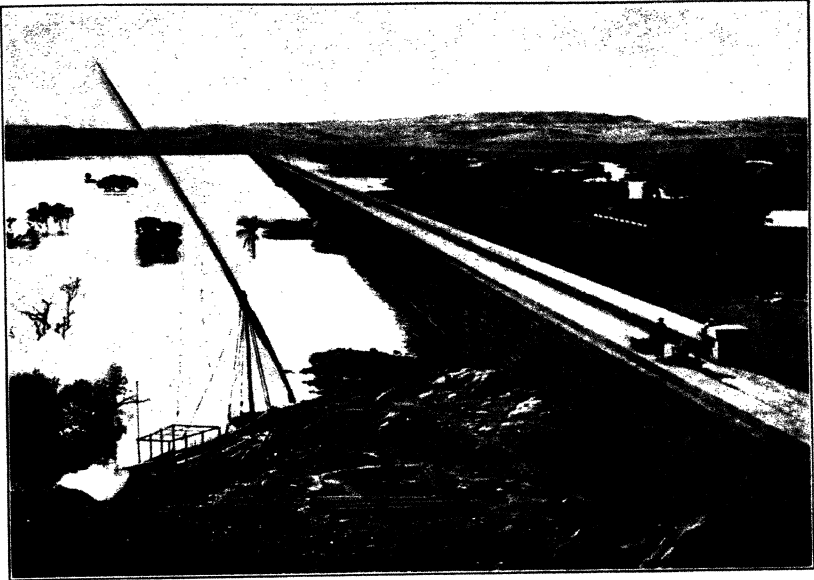


THE ASSUAN DAM ACROSS THE NILE
THE ORIGINAL DAM BEFORE IT WAS HEIGHTENED

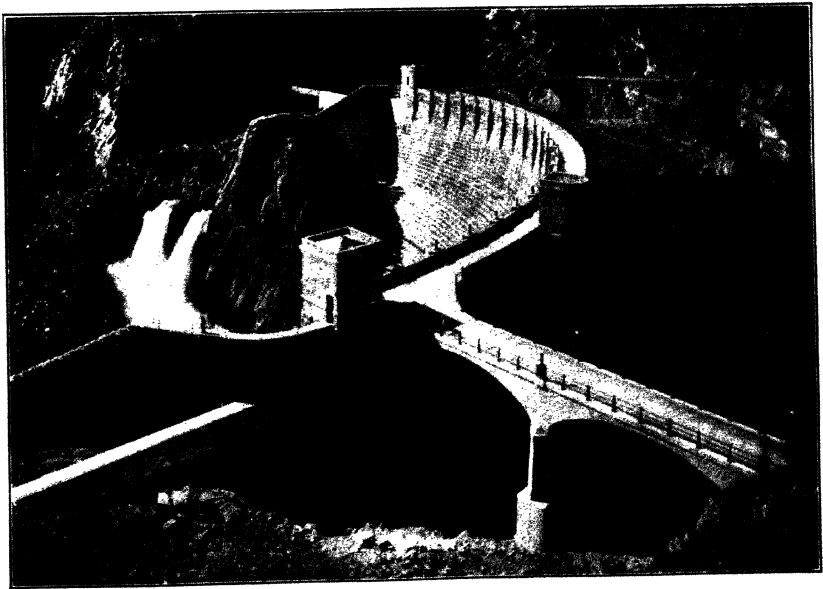


THE ROOSEVELT DAM
THE SALT RIVER IRRIGATION PROJECT, ARIZONA

DAMS



THE ASSUAN DAM ACROSS THE NILE
THE ORIGINAL DAM BEFORE IT WAS HEIGHTENED



THE ROOSEVELT DAM
THE SALT RIVER IRRIGATION PROJECT, ARIZONA

originally built to a height of about 96 feet in 1898-1902 and was raised to a height of 112 feet above bedrock in 1907-11. The increase of 16.4 feet in height raised the water level 22.96 feet above that of the original dam, due to changes in the level-regulating works. At the new height the level of the water in the river is affected for a distance of about 180 miles upstream. In raising the dam it was necessary to increase its thickness as well. This was done by adding masonry to the downstream face of the dam. The old and new masonry was bonded together on the inclined face of the dam by (1) $1\frac{1}{4}$ -inch iron rods 8.25 feet long, spaced about $3\frac{1}{4}$ feet apart each way; and (2) leaving a 6-inch space between the old and new masonry, divided into compartments, into which space cement grout was forced. To pass the muddy waters of the Nile and yet be able to retain the later clear flood waters, 4600 feet of the 6200 feet of the length of the dam was pierced with 180 sluices, all 6.56 feet wide, at four different levels. The 140 lower sluices are 22.96 feet high and the 40 upper sluices 11.48 feet high. The 130 sluices which work under the greatest head or pressure of water are controlled by Stoney balanced roller gates; the other 50 sluices by simple slide gates. When the dam was enlarged, the sluices were extended horizontally through the masonry added to give greater thickness. Navigation locks are provided at one end of the dam. For a description of the Assuan Dam, with particular reference to its heightening, consult *Engineering News*, Sept. 30, 1909.

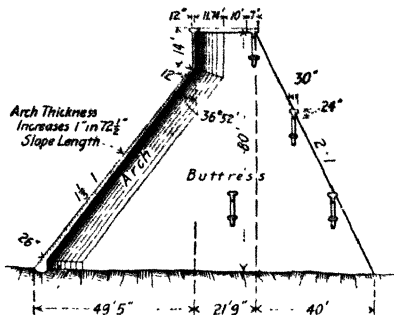
Arched or Curved Dams have given rise to a great amount of discussion as to the wisdom of utilizing the arch principle to resist a part of the thrust of the water on the dam, instead of relying wholly on *gravity dams*, or those with a section which gives sufficient weight to resist overturning and sliding.

The Shoshone, Roosevelt, and Pathfinder dams, already mentioned, are of the arched type. Earlier examples are the Zola, in France (see No. 4 in table); the Sweetwater, built in California in 1886-88, with a height of 98 feet above bedrock, a thickness of 12 feet at the crest and 46 feet at the base, and a crest length of 380 feet; and, most remarkable of all for slenderness, the (old) Bear Valley Dam, built in 1884, and only 3.17 feet thick on top, 20 feet at the bottom, and 60 feet high. Thirteen concrete dams designed on the arch instead of the gravity principle were built in Australia from 1896 to 1906 and are described in *Proceedings Institution of Civil Engineers*, vol. clxxviii, p. 1 (also in Wegmann's *Dams*, cited below). Most of these dams are only 3 feet thick at the top. Their height ranges from 28 to 87 feet. One of them, the Medlow Dam, is 65 feet high, 3.5 feet thick at the top and for 21 feet below the top, and 8.96 feet thick at the base.

Multiple-Arch Dams. Instead of a single arch reaching from bank to bank, a number of thin arches are sometimes thrown between a series of piers or buttresses. The Hume Lake Dam, a concrete structure built in 1908 in California, has 12 circular arches of 50 feet span, supported by 13 buttresses, and with each end of the dam built into the side of the valley. This dam is 61 feet high and 677 feet long, measured on the centre line of the crest. A similar structure is the New Bear Valley Dam, built in 1910-11. It has 10 arches and 11 but-

treesses; the latter spaced 32 feet on centres. It is 91.5 feet high above the lowest point of the foundation and 350 feet long on crest.

Hollow Reinforced-Concrete Dams. Since 1904 a considerable number of dams have been built consisting of piers or buttresses supporting a water-tight slab of reinforced concrete. One company alone built more than 60 such



TYPICAL CROSS SECTION BEAR VALLEY MULTIPLE-ARCH DAM
(The downstream toe of one of the buttresses is 91.5 ft. below the crest of the dam.)

dams from 1904 to 1913, one being 135 feet high. The lower side of this kind of dam may be left open under some conditions, or it may be closed by a concrete slab, much the same as on the upper side. Where the lower side is inclosed, the compartments inside the dam are sometimes used as power houses or for other purposes.

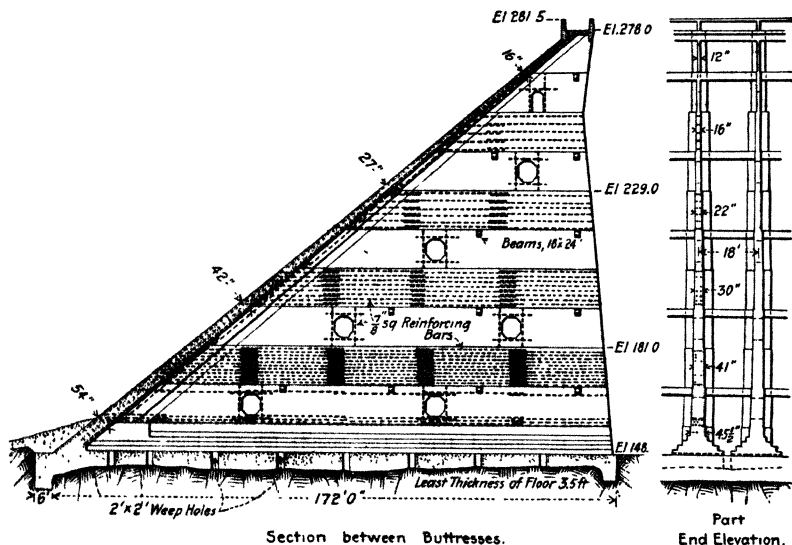
One of the highest hollow reinforced-concrete dams built to the end of 1913 was constructed in 1908-09 across the La Prele River, near Douglas, Wyo., for a private irrigation system. The dam is 130 feet high from the top of its floor to the top of the crest, but it extends about 7 or 8 feet beneath the floor and has parapets $3\frac{1}{2}$ feet high, making a total height of, say, 140 feet. The top length of the dam is about 330 feet and the bottom length only 110 feet, so narrow is the gorge in which it is built. The dam consists of a deck, or inclined slab, of reinforced concrete, 54 inches thick at the bottom and 12 inches thick at the top, supported by buttresses spaced 18 feet on centres. A concrete floor extends beneath the dam. Five of the bays at one side are formed into a spillway by dropping the crest 5 feet beneath the main crest. There is a roadway across the top of the dam. These hollow dams effect a great saving of masonry, as compared with the solid masonry structures, which is an object at points remote from cement mills or where long wagon hauls are necessary.

Concrete Dams are not essentially different from other masonry structures, except in their composition. (See CEMENT; CONCRETE.) The San Mateo or Crystal Springs concrete dam, near San Mateo, Cal., built in 1887-88 to a height of 115 feet and since raised to a height of 145 feet, is designed to reach ultimately 170 feet, with a top width, when completed, of 25 feet and a width at the base of 176 feet. Various other and later concrete dams have already been mentioned.

Rock-Fill Dams are built of large stones, or

rock, loosely put in place, but with hand-laid face or slope walls. To make such dams watertight, or sufficiently so for the objects to be attained, the upstream or wet slope may be faced with plank, concrete, concrete and asphalt, or steel. It is also possible to use earth to form either the upper or the lower section; or riveted steel plates may be built in the centre of the structure. A masonry wall, with earth above and rock fill below, faced on the lower slope with stone laid in mortar, is another variation. The adoption of this form of construction is generally in the interests of economy, in localities where the transportation of cement would be very costly, where earth dams are out of the question, and where stone is abundant and easily thrown into place. The stream flow must be passed around and not over rock-fill dams.

ished in thickness as they neared the top. The dam is 161 feet high above its lowest point, 130 feet high above the natural earth, and is of rock fill for 121 feet. The steel plates were protected by a coat of hot Alcatraz asphalt, then a layer of burlap, then harder asphalt, and finally one foot of Portland cement concrete, on each side. A part of the rock fill was deposited in place by the force of a very heavy blast, and the rest was transported from the quarry by a cableway (q.v.) 948 feet long. Nearly 180,000 cubic yards of stone were used. The Morena Rock-Fill Dam, which, like the Lower Otay, is a part of the water-supply system of San Diego, Cal., is 150 feet high in its rock-fill portion, but, counting a concrete coping wall 3 feet high and a concrete wall carried down 112 feet beneath upstream side of the dam, the structure has a maximum



Section between Buttresses.

LA FRELE DAM.

Part
End Elevation.

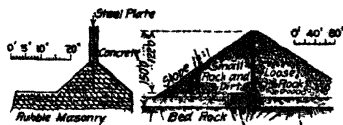
The Escondido Dam, built by a California irrigation district of that name, was one of the earliest of the rock-fill structures. It is 76 feet high, 10 feet thick at the top, and 140 feet thick at the base, has top and bottom lengths of 380 feet and 100 feet respectively. The hand-laid dry wall on the upper or wet slope is 15 feet thick at the base and 5 feet at the top. It is covered with redwood plank, and the space between the plank and the stone was rammed full of concrete. The joints in the planking were calked with oakum and daubed with asphalt. The Lower Otay Dam, near San Diego, Cal., completed in 1897, is a rock-fill dam with a steel core. The dam was started in masonry, but being carried to a height of 40 feet above its lowest point, when its top length was only 85 feet, it was decided to change the design. An inverted T-iron (thus, \perp) was bolted to the masonry, and steel plates $\frac{1}{2}$ of an inch thick, $17\frac{1}{2}$ feet long, and 5 feet high were riveted first to the T-iron, then to each other, until three courses had been placed. The plates were dimin-

height of 265 feet. The upstream slope is composed of individually placed stone, with the facing stone laid in cement for water-tightness. The dam was started in 1896, but construction was suspended from 1898 to 1909. The failure of the Walnut Grove rock-fill dam, 110 feet in height, is described under *Failures of Dams*, below.

Steel Dams have been built in a few instances. The first of these, so far as known, is near Ash Fork, Ariz., and was built in 1897 or 1898 by the Atchison, Topeka, and Santa Fe Railway Company to supply its engines and incidentally to furnish water to the village of Ash Fork. It forms a reservoir of 36,000,000 gallons' capacity. The steel portion of the structure is 184 feet long at the top, and its greatest height is 46 feet. It consists of a series of triangular steel frames, against the upper sides of which rest the riveted steel plates, three-eighths of an inch thick. These plates are curved so as to form a series of channels from the top to the bottom of the inclined face of the dam, with flat strips be-

teen. Water flows over the top of the steel dam and between two masonry abutments having a combined length of 116 feet.

A similar dam, but higher, longer, and resting on a concrete foundation, was built in 1900-01. at Redridge, Mich., to supply water to copper stamp mills. The steel portion of the Redridge

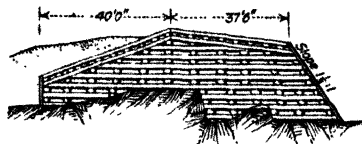


ROCK-FILL DAM WITH STEEL SHEET WALL OR DIAPHRAGM.
Southern California Water Company, San Diego, Cal.

Dam is 464 feet long between abutments, and its maximum height is 74 feet, including foundation. Earth embankments at either end bring the total length of the dam to 1006 feet. (Consult *Engineering News*, May 12, 1898, for details of Ash Fork Dam, and Aug. 15, 1901, for Redridge Dam.) The Hauser Lake steel dam, 70 feet high and 630 feet long, built across the Missouri River, near Helena, Mont., failed April 14, 1908, soon after completion. The failure appears to have been due to defective foundations. (Consult *Engineering News*, Nov. 14, 1907, and April 30, 1908.) The dam was rebuilt of concrete.

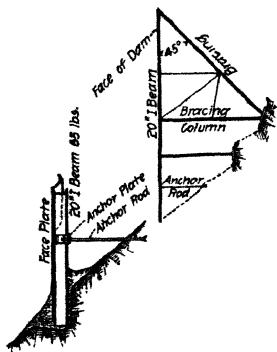
Timber Dams include a great variety of structures built of framed timber, logs, and cribwork of either timber or logs filled with stone. They are generally comparatively low, overflow dams. They frequently have a sloping upstream face and either a sloping or stepped downstream face, with an apron below the toe of the latter, to break the force of falling water. Sometimes piles are used in their construction, and often earth is filled against their upper side. The once famous timber dam at Holyoke, Mass., built in 1849 for water power, 1017 feet long and with a maximum height of 30 feet, was replaced in

shallows or rapids, but where permanent structures to raise the water level might do damage by causing floods at times of high water. They may also be used on any ordinary dam or on waste weirs. It is more common, however, to call movable devices connected with ordinary dams *flashboards* or *floodgates*. Flashboards are generally comparatively low and are of fragile construction or have supports designed to give way in time of freshet. There is a great variety of movable dams, but they fall more or less closely into three groups—*needle*, *wicket*, or *shutter*, and *bear-trap*. The latter have some decided points of superiority, being raised and lowered by the force of the water itself, on its being turned under or discharged from chambers beneath or within the dam. *Needle dams* were developed in France about the close of the eighteenth century. They are an outgrowth of the earlier French and English needle dams and consist of horizontal beams, or stop planks, dropped into grooves built in the two abutments of a pass through the dam. These beams could be lifted out at times of high water. Later, to facilitate handling, they were set vertically, or nearly so, resting against a sill below and a beam above. A chain was finally substituted for this beam to make greater lengths of dam feasible.



CROSS SECTION OF TIMBER AND STONE DAM.
Bangor, Me.

ible. In this way movable dams 40 feet wide were developed on the Yonne, in France. In 1834 M. Poirée increased the width of one of these dams, or passes, to 72 feet by substituting iron bars for the chains. The bars were short and were supported by means of vertical iron frames, placed at right angles to the length of the dam. To throw down the dam, it was only necessary to remove the needles one by one, detach the horizontal bars, then lower the frames into recesses in the top of the masonry portion of the dam. The needle dams were somewhat modified subsequently and used in various parts of France, in Belgium, in Germany, and in the United States. The first needle dam in this country was built in 1891-97 by the United States government across the Big Sandy River at Louisa, Ky. The whole improvement includes a lock 52 feet wide, a navigable pass 130 feet long, and an overflow weir 140 feet long. The sill of the pass was 13 feet, and that of the weir was 7 feet below the normal height of water in the pool. The steel frames supporting the pass needles were originally 4 feet between centres, but later the alternate frames or trestles were removed. The horizontal bars connecting the frames and supporting the upper ends of the needles were hinged at one end and hooked at the other. The frames had a sheet-iron floor, forming a footbridge, which fell with them, and were connected by a chain. The pass needles were of white pine, 12 inches wide, $8\frac{1}{2}$ inches thick at the bottom, and $4\frac{1}{2}$ inches thick at the top, and 14 feet 3 inches long, each weighing



CROSS SECTION OF STEEL DAM.
Ash Fork, Ariz.

1895-97 by a masonry structure some 50 to 60 feet high.

Movable Dams are those which can be lowered or raised at will, according to the stage of water in the river. They are generally aids to navigation, placed at stretches where there are

263 pounds when wet. The needles were set in place by means of a derrick on a boat, and were lifted out by means of a chain passing through irons fastened to their top, operated by an engine. The frames were raised or lowered from one of the abutments to the pass by means of a chain crab. This dam was raised $4\frac{1}{2}$ feet in 1907-08, or to a height of $17\frac{1}{2}$ feet on the pass sill and $11\frac{1}{2}$ feet on the weir sill. The span of the pass frames or trestles was increased to 20 feet, needles still being used. On the weir the needles were replaced by wickets.

Wicket or Shutter Dams have been developed from simple gates or shutters working on a horizontal axis near their tops, which have been used in Holland for centuries. These simple shutters have been elaborated until they are now made of short lengths, which may be revolved on their horizontal axis, then lowered so as to rest flatwise on the sill of the dam. They are operated from a bridge placed above them, which can be lowered much the same as the frames of the needle dams just described. In 1880 two wicket dams were completed on the Great Kanawha River by the United States government, and others have since been built on that stream. One, completed in 1892, has a pass 248 feet long, besides a weir 316 feet long and a lock 55 feet wide. The pass is closed with 62 Chanoine wooden wickets 3 feet 9 inches long and 14 feet high, with a 3-inch space between them, which may be closed by means of a timber, if desired. The first of a series of movable dams in the Ohio River, at Davis Island, near Pittsburgh, was built in 1878-85 and also has Chanoine wickets. There is one pass 716 feet long, another 1223 feet long, besides a fixed dam 456 feet wide, several weirs, and a lock 110 feet wide and 600 feet long between the gates. Many Chanoine wickets were in use on the rivers of the United States in 1912. Most of the wickets were of wood, but some were of steel. Metal wickets were first used at the La Mulatière Dam, near Lyons, France, in 1879.

Drum Dams are modifications of the wicket or shutter dam. One of these, named after its inventor, Capt. H. M. Chittenden, may be described, roughly, as being shaped like one-sixth of a cylinder. When lowered by revolving on a horizontal axis at the centre of the cylinder, it drops into the chamber, leaving one radial side of the cylinder flush with the sill. The sections are raised by the force of the water acting from beneath.

Rolling Dams are steel cylinders, either alone or provided with sheaths. On being opened, by power, they roll up inclined rails placed in recesses in the abutments or piers between which they extend. The first rolling dam was built in 1901-02, at Schweinfurt, Bavaria, and was 6.6 feet high and 114 feet long. Later rolling dams have been much higher, reaching nearly 28 feet. One built across the Spokane River, Washington, in 1910, is 19 feet high and 100 feet long. Consult *Engineering Record*, Dec. 13, 1913, for list of 50 rolling dams, in various parts of Europe, with three in the United States. The article describes various rolling dams, including their operating mechanism.

Bear-Trap Dams or Gates, in their simplest form, consist of two leaves extending across the pass or opening to be closed, and so hinged to the sill of the dam on their outer edge that they form a triangle when in use and lie flat on the sill of the dam when open; one leaf, when open,

overlaps the others. The space within the triangle is filled with water. On drawing out this water through suitable openings, the dam fills, and on admitting water beneath the leaves, when the dam is open, the leaves are raised slowly into position. Thus the dam is operated by the force of the water. The first dam of this type was built on the Lehigh River, in 1818, by Josiah White and Erskine Hazard, managers of the Lehigh Navigation Company, to secure slack water for shipping anthracite coal. In 1819, 12 more of these dams were built on the Lehigh. Until 1880 or later this type seems to have been used but little outside of Pennsylvania; but in 1886 two bear-trap gates, each 60 feet long, were built by United States engineer officers in the Beattyville Dam, across the Kentucky River. Since 1886 a number of other dams of this type have been built in this country. A study of bear-trap dams was made for the United States government by Capt. H. M. Chittenden and Major A. O. Powell, beginning in 1892. (Consult *Journal Association Engineering Societies*, Philadelphia, for June, 1896; also an article by Captain Chittenden reviewing the whole subject, in *Engineering News*, New York, Feb. 7, 1895.) Various modifications of the bear-trap dam have been made, including a hinge at the apex and another in the upper leaf, so in falling the dam falls over on itself, and there is no overlapping at the apex. The largest bear-trap dam yet built forms a part of the regulating works of the Chicago Drainage Canal, where the canal discharges into the Des Plaines River. The pass closed by this dam is 160 feet long and 20 feet high, besides which there are 15 sluice gates, 30 feet wide and 20 feet high, working vertically between masonry piers. Eight of the gates were walled up, as the full capacity was not deemed necessary for some time. This bear-trap dam is not for navigation, so it is mounted on a masonry structure of some height, permitting the upper gate to slide down the upper face of the masonry. This dam differs from others of the same type not only in being of steel instead of wood, but in having various mechanical devices to supplement its operation. A full illustrated description of this structure is given in *Engineering News* (New York) for March 24 and May 26, 1899.

Stony Roller Sluice Gates, first built at Belleek, Ireland, in 1883, have been put in at many important dams throughout the world to close large openings. These gates are usually suspended from service bridges by chains or rods, and when lifted from above they work on trains or rollers which with ends of the gates are placed in vertical grooves in piers. They have been used in water depths of 30 feet and, in lesser depth, to close openings 80 feet wide. A general review of movable dams, by B. F. Thomas, is given in the *Transactions of the American Society of Civil Engineers* (New York, 1888); much space is given to the various kinds of movable dams in both Thomas and Watt, *The Improvements of Rivers*, and Wegmann, *On Dams*, each cited below. Consult *Reports Chief of Engineers, United States Army* (Washington, 1860 et seq.), particularly those for 1884 and 1887.

Cofferdams (q.v.) are employed to exclude water from foundations and other classes of work while under construction. See **FOUNDATIONS**.

FAILURES OF DAMS

The Bradford earth dam, Sheffield, England, failed in March, 1864. This dam, built to supply water and furnish power to the city of Sheffield, was about 90 feet in height, 13 feet wide, and 1250 feet long, with slopes of $2\frac{1}{2}$ to 1. The dam, except for a puddle wall extending from end to end and 60 feet into the ground, was of earth loosely dumped from carts. Cast-iron outlet pipes about 500 feet in length, surrounded by clay puddle, extended through the base of the dam. While the reservoir was being filled for the first time, a leak suddenly appeared, and enlarged so rapidly that in 30 minutes the reservoir had emptied itself. The flood reached Sheffield at midnight, without warning, causing great destruction of property and the loss of 238 lives. In the official inquiry made as to the cause of the failure, it was claimed that in a work of such great magnitude the outlet pipes should not have been placed through the dam itself.

The failure of the Mill River Dam at Williamsburg, Mass., in 1874, was a conspicuous example of improper construction which resulted in complete saturation of the embankment. No engineer had been employed in constructing the work, and no proper means used for consolidating the embankment. One morning, when the water was 4 feet from the top of the dam, masses of earth were observed to slide from the outer slope of the embankment. In 20 minutes the reservoir was emptied of 100,000,000 cubic feet of water, which drowned 143 persons and destroyed \$1,000,000 worth of property.

The most disastrous reservoir failure of the nineteenth century was the destruction of the South Fork Dam, which caused the famous Johnstown flood on May 31, 1889. That this disaster was due to an insufficient spillway has been abundantly proved. The South Fork Dam was built on the headwaters of the Conemaugh River, 10 or 12 miles above Johnstown. It was of earth, 70 feet in extreme height. The dam was built as far back as 1852, and, after various changes in ownership, the reservoir in 1880 came into the possession of the South Fork Hunting and Fishing Club of Pittsburgh, Pa. The original specifications for the dam required a spillway 150 feet wide. The spillway existing at the time of the disaster was 130 feet wide at its upper end, but was obstructed by a bridge and by screens to prevent the escape of fish. It extended across a channel 176 feet long and at its lower end only 69 feet wide. In other words, the spillway was only half that originally contemplated, besides which a brick outlet culvert had been abandoned. Unusually heavy rains had been falling for several days, and for $3\frac{1}{2}$ hours before the break occurred the water had been flowing over the entire length of the dam. When the dam was carried away, the reservoir emptied itself in about 45 minutes. Over 2000 lives were lost in this disaster, and between \$3,000,000 and \$4,000,000 worth of property. No engineer was employed on the design or construction of the dam.

The Walnut Grove Dam, in Arizona, failed on Feb. 22, 1890. It was one of the highest rock-fill dams ever built, having been 110 feet in height, about 10 feet thick at the top and 140 feet at the base, with a top length of some 400 feet and a bottom length of 100 feet. Both faces were composed of granite blocks, laid by

hand and derrick, these dry-faced walls being 80 feet thick at the base and 5 feet thick at the top. It is supposed that a very heavy rainfall and an altogether inadequate spillway caused the destruction of the dam, which was overtopped for a number of hours. Many deaths resulted from the failure.

The failure of the Puentes masonry dam, in Spain, in 1802, was due to defective foundation, the central part of the dam resting upon piles instead of being carried down to bedrock. In the Habra masonry dam, in Algiers (see table), whose failure caused the drowning of 400 persons, the disaster was probably due to defective masonry work. The failure of the Bouzey masonry dam, near Epinal, France, in 1895, was caused by defective construction between the base and the foundation, although in its dimensions the dam was carried to the extreme of lightness.

The failure of the dam on the Colorado River, at Austin, Tex., which occurred in April, 1900, was due to defective foundation, largely on account of the soft limestone rock on which the foundation was laid. The dam was 1090 feet long, 66 feet high above the foundation, and 60 feet above low water. The upstream face of the dam was vertical, and the downstream face was curved, giving a thickness of 66 feet at the base and 20 feet near the top. On April 7, 1900, after a heavy rainfall of several days, when the water was flowing over the crest of the dam to a depth of 11.07 feet, a portion some 500 feet in length was detached from the remainder of the dam, broke into two parts, and was carried downstream. Two sections were left standing upright in the stream a few feet below the original portion. One of these broke up in a few hours, but the other remained intact. When the dam broke, eight people in the power house were drowned by the sudden rush of water, and during the following night the power house itself was partially destroyed.

A dam at Austin, Pa., which had previously failed but had been continued in use, went out on Sept. 30, 1911. The resulting flood in the narrow valley caused the death of 85 persons at Austin, $1\frac{1}{2}$ miles below the dam, and at Costello, 3 miles farther downstream. The dam was of reinforced concrete, gravity section, about 50 feet high and 554 feet long, with a low spillway near the centre. On its completion, about Dec. 1, 1909, a vertical crack appeared, and later a second one showed. On Jan. 22, 1910, the river being in flood, water leaked through what proved to be porous rock beneath the dam. The following day the middle portion of the dam slid downstream, 18 inches at the bottom and 31 inches at the top, and vertical cracks elsewhere separated the dam into a number of parts. The water was lowered by dynamiting, but the reservoir was subsequently allowed to partly refill. Although engineers employed by the owners advised that the dam be strengthened, nothing to that end was done. On Sept. 30, 1911, heavy rains caused overtopping of the dam, and about four-fifths of its length was broken into seven large fragments, most of which remained upright, but two of which were carried from 15 to 25 feet downstream. The failure was due to defective foundation, which might have been made safe had the engineer not been limited in the sum allowed for building the dam. The Austin failure and many lesser failures about that time led to

more thorough public supervision of the design and construction of reservoirs in a number of States.

RESERVOIRS

Reservoirs may be classified broadly into *impounding, settling, storage, and distributing* reservoirs, all of which, except impounding, may be covered or open, the latter being the general form. *Impounding reservoirs* are formed by throwing a dam across some stream and flooding the country above. *Storage reservoirs* are often created in the same way; or they may be formed more or less completely by embankments or excavation, or a combination of the two. Both impounding and storage reservoirs are designed to conserve a supply of water above the normal consumption, for times when either the natural yield is below the average or the consumption is unusually great. Impounding reservoirs are always for storage purposes, whether the capacity be for a few hours' supply or for a much longer period. The larger and more regular the daily yield of the stream or other source of supply, as compared with the consumption, the smaller need be the storage capacity. In some cases storage is required for months or even for a year. The new Croton Dam provides a storage of about 32,000,000,000 gallons; the Kensico Dam of the Catskill Water Supply of New York City, 38,000,000,000 gallons and the Olive Bridge or Ashokan Dam, 132,000,000,000 gallons. The Wachusett Dam, of the Metropolitan Water-Supply District (Boston and vicinity), retains about 63,000,000,000 gallons of water. Much larger are the storage capacities of a number of the reservoirs of the United States Reclamation Service, that formed by the Roosevelt Dam holding 420,000,000,000 gallons.

An important sanitary question involved in the construction of impounding and storage reservoirs for public water supplies is the stripping of the sites, or flooded areas, of all heavy accumulations of organic matter which, either through their decay or through serving as a food supply to low forms of life, would impart unpleasant tastes and odors to the stored water. It is a common practice to remove stumps and timber and to burn over the site, where practicable, before filling such reservoirs; but outside of New England very little more than this has been done towards stripping the sites of storage reservoirs. The estimate for the Wachusett Reservoir, mentioned above, included \$2,910,000, out of a total cost of \$9,105,000, for stripping the reservoir site. Aside from stripping and clearing the sites, the construction of impounding reservoirs pertains mostly to the dam and its accessories. One additional element of importance in some cases is the excavation at the border of reservoirs to prevent shallow flowage and the growth and decay of vegetable matter which would occur when these slopes are alternately exposed and covered by the varying levels of water in the reservoir.

Settling Reservoirs, also known as *subsiding* and as *sedimentation* reservoirs, are shallow basins, with long weirs between the several compartments over which the water flows in thin sheets, thus drawing off only the upper and most clarified layer. (See WATER PURIFICATION.) It is desirable to make provision for removing the mud, to which end the paved bottoms may slope to a common point and then

connect with a scour pipe, through which the mud may be flushed with a stream of water from a hose.

Distributing Reservoirs are generally located within or near the city which they serve. They are often classified as high, low, and middle service, according to their elevation and the areas which they supply. They may afford storage for periods ranging from a day or two up to several weeks; but in the latter case they would perform the duty of a storage reservoir as well. Occasionally distributing reservoirs are formed by a dam across a stream, but, as a rule, they have masonry walls above or below the natural surface. The construction of embankments or walls does not differ essentially from that of earth and masonry dams, except that when masonry is used the principles of design are more like those involved in the planning of earth-retaining walls, subjected, of course, to water pressure on the other side at times, but also liable to be empty. It is common to line the inner slopes of reservoir embankments with stone, brick, concrete, or asphalt. The bottoms are frequently lined like the sides. When concrete is used, it is well to lay it in relatively small squares, with a good filling for the joints, to prevent cracking.

Covered Reservoirs may have vaulted roofs of masonry, generally concrete masonry, or else less expensive and more temporary roofs of timber. The cost is so great that covering is rarely attempted in the United States, except for relatively small reservoirs receiving either filtered water or that from underground sources, either of which is liable to injury through the development of organisms giving rise, in their life processes, to bad tastes and odors.

Bibliography. Wegmann, *Design and Construction of Dams* (6th ed., New York, 1911); Schuyler, *Reservoirs for Irrigation, Water Power and Domestic Supply* (ib., 1901); Frizzell, *Water Power* (ib., 1901); Morrison and Brodie, *High Masonry Dams* (ib., 1910); Thomas and Watt, *The Improvement of Rivers* (2d ed., ib., 1913); Fortier and Bixby, *The Storage of Water for Irrigation Purposes* (United States Department of Agriculture, 1912, two parts)—describes timber, earth, hydraulic-fill and rock-fill dams; also general treatises on water works by Fanning, Folwell, Goodell, and Turneaure, and Wilson, *Manual of Irrigation Engineering* (New York, 1897).

DAMSEL FLY (so called from the French name *demoiselle*). An insect of the family Agrionidae, order Odonata, closely allied to the dragon flies. They are, says Howard, the small, graceful species, with extremely slender bodies and narrow, clear wings, held vertically in repose, which are very commonly found over large bodies of still, fresh water. "All of our North American species [about 75] are small, but in tropical regions they grow to a large size, and some South American forms are among the largest species of the order Odonata. They do not fly high in the air, but frequent low-growing aquatic vegetation. The colors, as a rule, are rather dull, but the slender bodies of some are brilliantly blue, green, or even red." Many authors unite with these as a subfamily the dark-colored, prominent-eyed flies otherwise regarded as constituting the separate family Calopterygidae. The life history of these flies is substantially that of the dragon flies (q.v.). See PLATE OF DRAGON FLIES.

DAMSEL OF BRITTANY. A title given to Eleanor of Brittany, sister of Arthur, Count of Brittany, and niece of King John of England, who confined her in the castle of Bristol, where she died in 1241.

DAN. A city on the northern boundary of Israel, called originally Laish (Judg. xviii. 29), but renamed Dan by the Danite invaders. Owing to its northerly location (Gen. xiv. 14), it was often used in connection with Beersheba (1 Sam. iii. 20; 2 Sam. iii. 10) in the phrase "from Dan to Beersheba," to express the whole land of Israel. The Danites introduced in this city the worship of Yahwe with the image taken from Micah's sanctuary in Mount Ephraim, and with the Levite who is said to have been the grandson of Moses (Judg. xviii). Later Yahwe was worshiped there under the form of a bull, and the cult was organized by Jeroboam (1 Kings xii. 29). At the solicitation of Asa, King of Judah, Bar Hadad, King of Damascus, invaded Israel, and among other cities Dan was destroyed (1 Kings xv. 20; 2 Chron. xvi. 4). The ruins of the city are identified with modern Tel el Kadi. Kadi is the Arabic equivalent of Dan, which means 'judge.' The mound is very extensive. No excavations have yet been undertaken.

DAN. The eponymous ancestor of the tribe of Dan, the son of Jacob and his concubine Bilhah (Gen. xxx. 5, 6). The tribe was one of the smallest and weakest of the Hebrew confederacy. Belonging to the northern group, its territory lay southwest of Ephraim, occupying the valleys of Sorek and Ajalon (Josh. xix. 40-46). Owing, however, to difficulties with the Amorites (Judg. i. 34), we find them later migrating to the far north, and conquering the city of Laish, which they rebuilt and called Dan (Josh. xix. 47; Judg. xviii). Samson (q.v.) was of the tribe of Dan (Judg. xiii. 2, 24, 25). The tribe is referred to in the song of Deborah (Judg. v.); the text is somewhat uncertain, but Schmidt has proposed to read "Dan stayed where the stream breaks forth," referring to the Jordan, at whose fountain the city of Dan was situated, and "Asher sought protection in ships, he dwelt on the shore of the sea," which is in harmony with what is otherwise known concerning the location of these tribes. If this is correct, Dan already occupies the territory around Laish in the time of Deborah. The description of Dan in the blessing of Jacob (Gen. xlix.) may even be older. It refers to the tribe as being self-governing and skilled in making raids on travelers. Dan, though designated as a "concubine" tribe, which generally indicates secondary rank, plays no unimportant part in the early traditions and legends. This is in part due to the fame and antiquity of the sanctuary at Dan, which as late as the days of Amos is put on a level with Bethel and Beersheba (Amos viii. 14). In this sanctuary the older rites and practices were preserved with great fidelity, and its priests traced their origin to Moses himself (Judg. xviii. 30). The name Dan ('judge') may originally have been the title of a deity. Consult Ed. Meyer, *Die Israeliten und ihre Nachbarstämme*, pp. 524 ff. (1906); N. Schmidt, *The Messages of the Poets*, pp. 356 ff. (1911).

DANA, CHARLES ANDERSON (1819-97). An American journalist, born at Hinsdale, N. H., Aug. 8, 1819. He studied at Harvard, but, owing to defective eyesight, did not graduate.

He joined the Brook Farm Association in 1841, edited in its interest the *Harbinger*, contributed to the Boston *Chronotype*, and, after the failure of Brook Farm, was, with its founder, Ripley (q.v.), connected with the *New York Tribune* (1847-62). Disagreement with Horace Greeley in war politics, proclaimed in a once-famous editorial, "On to Richmond," forced his resignation. He was Assistant Secretary of War in 1863-64. After the war he edited the *Chicago Republican*, which failed. He then returned to New York and became part proprietor and editor in chief of the *New York Sun*—a position which he held from 1868 to his death. With George Ripley he planned and edited the *New American Cyclopaedia* (1857-63), and its successor, the *American Cyclopaedia* (1873-76). He compiled also the well-known *Household Book of Poetry* (1857) and collaborated in a *Life of Grant* (1868). Other works are: *The Art of Newspaper Making* (1895); *Lincoln and his Cabinet* (1896); *Recollections* (1897). At the time of his death at Glen Cove, L. I., on Oct. 17, 1897, Mr. Dana was in many ways the most noted journalist in the country. He had a brilliant intellect, a finished and incisive style, and a gift for mordant irony which made him a dangerous enemy. Every detail of the art of making a good newspaper he thoroughly understood, but he was generally believed to be so intense in his prejudices that he failed to acquire the authority to which his talents entitled him. Consult J. H. Wilson, *Life of Charles A. Dana* (New York, 1907).

DANA, CHARLES LOOMIS (1852-). An American neurologist. He was born at Woodstock, Vt., and was educated at Dartmouth College and the New York College of Physicians and Surgeons. He served as professor of physiology in the New York Woman's Medical College in 1880-86, of nervous and mental diseases at the New York Postgraduate Medical School in 1884-96, and of nervous diseases in Dartmouth Medical College in 1890-93, and four years later he became professor of nervous diseases in Bellevue Hospital Medical College. He was also an editor of the *Journal of Comparative Medicine* and associate editor of the *Medical Record*. His publications include a *Text-Book of Nervous Diseases* (1892; 7th ed., 1908).

DANA, EDWARD SALISBURY (1849-). An American mineralogist, born at New Haven, Conn. He graduated at Yale University in 1870 and became tutor there in 1874. He received his doctor's degree at Yale in 1876 and also studied at Heidelberg and Vienna. In 1879 he was made assistant professor of natural philosophy and astronomy, and later professor of physics, at Yale. After 1875 he edited the *American Journal of Science*. His publications include numerous papers on mineralogical topics; "Appendix I" and "Appendix II" of Dana's *System of Mineralogy*; a *Text-Book of Mineralogy* (1877); *Minerals and How to Study Them*, and a *Text-Book of Mechanics* (1881).

DANA, FRANCIS (1743-1811). An American statesman and jurist. He was born in Charlestown, Mass., graduated at Harvard in 1762, soon became a leading member of the bar and, as a Whig, prominent in Colonial politics, and from 1776 to 1780 was a member of the Executive Council of Massachusetts. He was elected to the Continental Congress in 1776 and from the first took an important part in the work of that body. In 1778 he was made chairman

of a committee appointed to draw up plans for the reorganization of the army and in the same year was a member of the committee of three to which the conciliatory proposals of Lord North were referred. He went abroad in September, 1779, as the official secretary of John Adams, recently appointed to negotiate a treaty of peace with Great Britain, and, after spending some time in Paris and Amsterdam, was sent in March, 1781, as United States Minister to the court of St. Petersburg. Catharine persistently refused to receive him as an accredited Minister, however, and in 1783 he returned to America. He was again elected to the Continental Congress (1784) and in January, 1785, was appointed Justice of the Supreme Court of Massachusetts. In 1786 he was a delegate to the Annapolis Convention (q.v.) and in the following year was also elected as a delegate to the Constitutional Convention at Philadelphia, but was prevented by illness from attending. In the State Convention of 1788 he cooperated with Theophilus Parsons and John Hancock in securing the ratification of the Federal Constitution by Massachusetts. He was Chief Justice of the Massachusetts Supreme Court from 1791 to 1806, during which period he took no active part in State or national politics.

DANA, JAMES DWIGHT (1813-95). An American geologist and one of the eminent scientists of the nineteenth century. He was born in Utica, N. Y. His father was a successful business man of New England birth, and his mother was Harriet Dwight, daughter of Seth Dwight, of Williamsburg, Mass. Dana early became interested in scientific studies. In his school days at Utica he devoted much time to chemical investigations, and he frequently made excursions to distant points for the purpose of collecting minerals. Attracted by the reputation of the elder Professor Silliman, he entered Yale College in 1830, where for three years he pursued the study of classics, mathematics, and natural sciences. In 1833 Dana received an appointment as instructor in the United States navy, a position that afforded him an opportunity of European travel. During a cruise in the Mediterranean he wrote a description of Vesuvius, the first of his long series of scientific papers that were published in the *American Journal of Science*. Three years afterward he returned to Yale and was appointed assistant to Professor Silliman. While at New Haven he published his first important scientific work (*The System of Mineralogy*), a book that subsequently passed through several editions and attained a reputation in both Europe and America as a standard of reference. From 1838 to 1842 Dana was a member of the Wilkes Exploring Expedition sent out by the United States government. While on this expedition, which explored the little-known parts of the Pacific Ocean, he had a wide field for scientific discovery and description. The opportunities presented were such as few scientists have received; so extensive was the material collected that, upon his return to the United States, Dana devoted 13 years of almost constant labor to its study. The results were published by the government in three voluminous reports: "Zoöphytes," in *United States Exploring Expedition* (Philadelphia, 1846); "Geology," in *United States Exploring Expedition under C. Wilkes, U. S. N.* (Philadelphia, 1849); and "Crustacea," in *United States Exploring Expedition under C. Wilkes,*

U. S. N. (New York, 1852-54). In the work on "Zoöphytes," 230 species were described by Dana for the first time, while the report on "Crustacea" contained descriptions of no less than 658 new species. The intense zeal with which Dana pursued this task seriously impaired his health, and although he was able to accomplish much in after years, his life henceforth was a continual struggle against disability.

The value of Dana's services to science received prompt recognition from Yale College, which appointed him in 1850 to the professorship of natural history, a position he filled from 1855 to 1890. During this period his activities found expression in lectures to college students, in several textbooks on geology and mineralogy, and in numerous contributions to scientific journals. His work was characterized by keenness of perception, great powers of analysis, and by vivid imagination. These qualities eminently fitted him for geological investigations, and his discussions of the grander features of the earth, such as the form and origin of continents, mountain building, and volcanoes, are among the most valuable contributions to scientific literature. From 1846 until his death he served almost continuously as editor of the *American Journal of Science*, in which many of his papers were published. Dana received many marks of honor from American and foreign institutions. He was elected president of the American Association for the Advancement of Science in 1854 and of the Geological Society of America in 1890, and was at various times a member of the Royal Society of London, the Institute of France, the Royal Academy of Berlin, the Royal Academy of Vienna, and of many other learned societies. In 1872 the Geological Society of London conferred upon him the Wollaston medal "in acknowledgment of his services to mineralogy and geology," and in 1877 he received the Copley medal "for his biological, geological, and mineralogical investigations, carried on through half a century, and for the valuable works in which his conclusions and discoveries have been published." The more important of his contributions to scientific literature, in book form, are the reports previously mentioned, and the following, some of which have passed through several editions: *A System of Mineralogy* (1837); *Manual of Mineralogy* (1848); *Manual of Geology* (1862); *Coral and Coral Islands* (1872); *Text-Book of Geology* (1864); *The Geological Story Briefly Told* (1875). He died in New Haven, April 13, 1895.

DANA, JOHN COTTON (1856-). An American librarian, born in Woodstock, Vt. He graduated at Dartmouth College in 1873, studied law, was admitted to the New York bar in 1883, but after working as a land surveyor and civil engineer in Colorado became librarian of the Denver Public Library in 1889. He took charge of the Springfield (Mass.) City Library in 1898, and in 1902 of the Newark (N. J.) Free Public Library, which he brought to a remarkable degree of efficiency. He was president of the American Library Association in 1896. He wrote *A Library Primer* (1899), *Notes on Book-Binding for Libraries* (1906), and several chapters in *Modern American Library Economy* (1910 et seq.) ; and with Henry W. Kent edited *Literature of Libraries in the Seventeenth and Eighteenth Centuries* (6 vols., 1906-07). With C. L. Dana he compiled *Horace: The Roman Poet Presented to Modern Readers* (1908), a selection

of versions of the odes, and published *Cops: The Hostess of the Inn* (1909), a version of the pseudo-Vergilian poem.

DANA, NAPOLEON JACKSON TECUMSEH (1822-1905). An American soldier, born in Eastport, Me. He graduated at West Point, and was assigned as second lieutenant of infantry in 1842. During the Mexican War he served in both the northern and the southern campaigns, and in April, 1847, was brevetted captain at Cerro Gordo, where he was severely wounded. In 1855 he resigned and thereafter until 1861 was engaged in the banking business in St. Paul, Minn. On the outbreak of the Civil War he entered the service as colonel of a regiment of Minnesota volunteers, and in February, 1862, was appointed brigadier general of United States volunteers. He served throughout the Peninsular and Maryland campaigns, was seriously wounded at Antietam; became a major general of volunteers in November, 1862; was engaged in various operations in the Department of the Gulf, and then commanded successively the District of Vicksburg, the Sixteenth Army Corps, the districts of West Virginia and Vicksburg, and the Department of the Mississippi. In May, 1865, he resigned from the service, and subsequently took an active interest in railway management, becoming president of the Montana and Union Railway Company in 1885. He was appointed captain and assistant quartermaster U. S. A., by special act of Congress, and retired from active service in 1894.

DANA, PAUL (1852-). An American journalist, born in New York City and educated at Harvard and Columbia universities. He joined the staff of the *New York Sun* in 1880 and in 1897 succeeded his father, Charles Anderson Dana (q.v.), as editor; in 1903 he retired. He was also major in the National Guard of New York State in 1883 and was commissioner of public parks of New York in 1891.

DANA, RICHARD (1699-1772). An American jurist. He was born in Cambridge, Mass., graduated at Harvard in 1718, and soon became one of the leaders of the Massachusetts bar. He was also prominent, as a Whig, in Colonial politics, frequently presided over Boston town meetings, was chosen to administer the oath to Andrew Oliver binding him not to carry out the provisions of the Stamp Act, and in 1770 was a member of the committee appointed to make a careful investigation of the Boston Massacre.

DANA, RICHARD HENRY (1787-1879). An American poet, essayist, and novelist, born in Cambridge, Mass., Nov. 15, 1787. He entered Harvard College in 1804, but remained there only three years. Adopting law as a profession he was admitted to the Boston bar in 1811, but after some activity in politics renounced the practice of law for literature. In 1815 he became associated with the *North American Review*, to which he contributed, and of which he was for a time an editor. He then (1821) started a miscellany, *The Idle Man*, to which his friend Bryant contributed, but which came to an end after the sixth number had been issued. His published works are: *Poems* (1827); *Thoughts on the Soul* (1829), a poem; *Poems and Prose Writings* (1833; enlarged ed., 2 vols., 1850), the best of which were republished in *The Buccaneer and Other Poems* (London, 1844). He did his best work as a critic and had considerable influence in forming the taste of New

England in the early part of the century. His poetry was good for the time, but is read little to-day. "The Buccaneer" is probably his best poem; his prose tales, such as "Paul Felton," display imagination, but are poorly constructed.

DANA, RICHARD HENRY (1815-82). An American author, born in Cambridge, Mass., a son of Richard Henry Dana the poet. He developed in early life a passion for the sea and was with difficulty restrained from entering the navy. He entered Harvard, but suffered from weak eyes, and, to cure them, undertook a Pacific voyage as a common sailor, a record of which is given in his sea classic *Two Years Before the Mast* (1840; augmented ed., 1869), a book often republished and translated. On his return Dana reentered Harvard and graduated in 1837. He studied law and attained eminence in practice. On sea usages and laws he wrote *The Seaman's Friend* (1841), reprinted in England as *The Seaman's Manual*. He contributed to legal journals and to the *North American Review*, wrote *To Cuba and Back* (1859), and edited *Wharton's International Law* (1866). In 1876 he was appointed Minister to England, but was refused confirmation through a paltry political intrigue and unfounded accusations of plagiarism. He richly deserved the honor because of his patriotism, his high character, and his diplomatic and legal learning. To prosecute studies on international law he went to Europe in 1878. He died in Rome of pneumonia. Consult Adams, *Richard Henry Dana: A Biography* (2 vols., 1890). *Two Years Before the Mast* retains its position as a classic in its kind. A notable edition of it, with an introduction by Dr. Wilfred T. Grenfell and with illustrations, appeared in New York and London in 1911.

DANA, RICHARD HENRY (1851-). An American lawyer, son of Richard Henry Dana (1815-82). He was born in Cambridge, Mass., graduated from Harvard College in 1874 and from Harvard Law School in 1877, and was admitted to the bar in Boston. In 1878-79 he organized the Associated Charities of Boston. He drafted the Civil Service Reform Act of Massachusetts in 1884 and the Australian Ballot Act in 1888, and from 1889 to 1892 was editor of the *Civil Service Record*. His activities in behalf of civil service, taxation, ballot, election, and social reforms led to his being made chairman of the Council of the National Civil Service Reform League. He is author of *Double Taxation in Massachusetts* (1895); *The Corrupt Practices Act* (1906); *The Australian Ballot System of Massachusetts* (1911); *Trent: an Aftermath* (1912).

DANA, SAMUEL LUTHER (1795-1868). An American chemist. While chemist of the Merrimack print works he invented a method of bleaching cotton goods which was widely adopted, and discovered that sodium phosphate is a mordant, a fact of considerable importance in the art of calico printing. His writings include *A Muck Manual for Farmers* (2d ed., 1843) and *An Essay on Manures* (1850).

DANA, WILLIAM PARSONS (1833-). An American marine, genre, and animal painter, born in Boston. He studied art in Paris under Picot and Le Poitevin and lived in New York and Newport from 1862 to 1870. He then took up his permanent residence in Europe. He depicts the sea in all its phases and reaches a high degree of poetry and sentiment in such marines as "Solitude," exhibited at the Paris Exposition

in 1878, where he was also awarded a medal for his "Gathering Seaweed." Other good examples are "Emby's Admiral" (Pennsylvania Academy of Design, Philadelphia); "Burning Wreck"; "Ebbtide at Yport"; "Chase of the Frigate Constitution," and "Heartsease" (Metropolitan Museum, New York), the best known of his genre pictures, which, though happy in composition, are rather weak in execution. He was elected to the National Academy of Design in 1867.

DANAË, dān'ā-s (Lat., from Gk. Δανάη). The daughter of Acrisius, King of Argos. According to the legend, an oracle declared that her son would kill his grandfather. Acrisius therefore confined Danaë in an underground chamber or in a tower of bronze. Here she was visited by Zeus in a shower of gold and bore him Perseus (q.v.). Acrisius set mother and child adrift in a chest. They came safely, however, to the island of Seriphos. Danaë remained in the island until Perseus had grown up and become a hero famous for his exploits. She afterward accompanied him to Argos. On his approach Acrisius fled, but was subsequently slain accidentally by Perseus at Larissa. Danaë's story was often told in Greek and Roman tragedy. Rembrandt, Correggio, and Titian have made the picturesque union of Danaë and Zeus the subject of famous paintings, which hang respectively in the Hermitage at St. Petersburg, the Palazzo Borghese at Rome, and the Museo Nazionale at Naples. A second Titian on the same myth is in the Imperial Gallery, Vienna. Consult Gayley, *The Classic Myths in English Literature and Art* (Boston, 1911).

DANAËUS. See DANAËU.

DANAI, dān'ā-i, or **DANAOI**, dān'ā-oi (Lat., from Gk. Δαναοί, *Danaoi*). A term originally applied to the Argives as the descendants of King Danaüs (q.v.). Homer uses the name as a general designation of the Greeks before Troy.

DANAIDE, dān'ā-id (from Lat. *Danaides*, Gk. Δαναίδες, the 50 daughters of Danaüs, condemned, with one exception, to pour water eternally into sieves as a punishment for murdering their husbands on their wedding night at their father's bidding). An early form of water wheel, sometimes called a tub wheel. It resembled a smaller tub set in a larger one, with a free annular space and with a horizontal space between the two bottoms provided with radial floats, arranged spirally. The whole device revolved on a vertical axis, water flowing through it vertically.

DANAIS, dān'ā-is (Neo-Lat., from Gk. Δανάη, daughter of Danaüs). A genus of large blue- and brown-winged, strongly marked nymphalid butterflies of the tropics, of especial interest to the students of mimicry and protective coloration. According to Bates and Wallace certain South American species are distasteful to the local birds, monkeys, and other butterfly hunters, and therefore fly about regardless of exposure; and they are "mimicked" by other butterflies, which are eatable, in order to secure immunity through this gradually acquired resemblance. (See *MIMICRY*.) An Australian species is the bugong "moth," whose grub the aborigines regard as a dainty. (See *BUGONG*.) The representative of the group in the United States is the familiar milkweed butterfly, formerly classified as *Danaïs archippus*, now known as *Anosia pleippus*. See *MILKWEED BUTTERFLY*.

DANAKIL, dā'nā'k'il. An Ethiopian people, calling themselves Afar. See also *AFRICA, Ethnology*.

DANAO, dā-nā'ō. A town of Cebu, Philippines, situated 4 miles north of Cebu, on the coast, near the mouth of the Danao River (Map: Philippine Islands, E 5). Its harbor is poor, the mouth of the Danao River being choked by a sand bar. The town is very old, having existed from the time of the Spanish conquest. Pop., 1903, 16,173.

DANAËS, dān'ā-ŭs (Lat., from Gk. Δαναός). In Greek legend, the son of Belus and Anchinoë, grandson of Poseidon, brother of Ægyptus, and originally ruler of Libya. Thinking his life in danger from the machinations of his brother, accompanied by his 50 daughters, known as the Danaides, he fled to Argos, where he was chosen king, after the banishment of Gelanor, the last of the Inachidae. The 50 sons of Ægyptus followed him and sought the hands of his daughters in marriage. Danaüs consented, but, in fear of treachery or in revenge for his exile, gave each of his daughters a dagger and made them promise to murder their husbands on their wedding night. All did so, except Hypermnestra, who saved her husband, Lynceus. The future of the Danaides was variously told. According to one version, Danaüs found no suitors for his daughters and finally offered them as prizes in a racing contest. They were thus married to the Argive youth and became the ancestors of the Danai. The story of Lynceus was also variously told: according to one version Hypermnestra was forgiven, and Lynceus chosen by Danaüs as his successor. The other version was that Lynceus later slew Danaüs and his guilty daughters. The Danaides in the lower world were condemned to the never-ending task of filling with water a vessel full of holes. The Danaides seem to have been regarded as nymphs of the springs in the plain of Argos; Danaüs is said to have been the first to dig wells for the inhabitants, who thereupon chose him king. The murder of their husbands by the Danaides has been supposed to represent the drying up of the springs and rivers in summer by the nymphs. The tomb of Danaüs, in the Agora of Argos, was shown as late as the time of Pausanias. See *DANAIDE*.

DANBURITE. A silicate of calcium and boron crystallizing in the orthorhombic system. It was first found at Danbury, Conn.

DANBURY. A city and one of the county seats of Fairfield Co., Conn., 64 miles by rail north-northeast of New York City, on the Danbury and Highland divisions of the New York, New Haven, and Hartford Railroad (Map: Connecticut, B 4). Noteworthy features include the State normal school, Danbury Hospital, Danbury Agricultural Society, courthouse, State armory, county jail, public library, parks, two soldiers' monuments, and one to General Wooster. The manufacture of hats dates from 1780, and the city in 1914 stood first in that industry in the United States. Other products are machinery for making hats and cutting fur, paper and wooden boxes, underwear, silk, and silver-plated ware. The government is vested in a mayor and a city council, which confirms the mayor's nominations to the police department and elects all other administrative officials. The water works are owned by the city. Pop., (town) 1900, 19,474; 1910, 23,502; (city) 1900, 16,537; 1910, 20,234.

Danbury was organized as a town in 1687, was incorporated as a borough in 1822, and was chartered as a city in 1889. Supplies were stored here during the Revolution, and in April, 1777, General Tryon destroyed the stores and burned a large number of the buildings. A force pursued, and, in a skirmish at Ridgefield, General Wooster (q.v.) was mortally wounded. Consult Bailey, *History of Danbury, 1684-1896* (New York, 1896).

DANBY, FRANCIS (1793-1861). An Irish painter, born at Common, near Wexford, Nov. 16, 1793. He entered the Royal Dublin Society's school and also studied under O'Connor. In 1820 he began to exhibit, at the Institute and Royal Academy, a number of romantic compositions, such as "Disappointed Love" (South Kensington Museum) and "Sunset at Sea after a Storm," which established his reputation. For "The Delivery of Israel out of Egypt" he was made associate of the Academy, and three scenes from the Apocalypse increased his growing popularity; but in 1829 he was forced to leave England on account of a domestic scandal and went to live in Switzerland. After his return in 1840 he settled at Exmouth, where he painted a number of poetical landscapes, usually sunrise or sunset effects, such as "The Fisherman's Home" (National Gallery, London), and the "Evening Gun." He was a painter of imaginative scenes, reproducing his impressions of nature in a fanciful style which sometimes erred on the side of the theatrical. His execution is smooth and thin. His son, JAMES FRANCIS DANBY, was a landscape painter of some repute.

DANBY, FRANK (MRS. JULIA FRANKAU) (1864-1916) A British author. She received her education under Mme. Paul Lafargue, the eldest daughter of Karl Marx, and in 1883 she was married to Arthur Frankau. She contributed to the *Saturday Review* and gained popularity as a novelist. Her writings include: *Dr. Phillips, a Mauda Vale Idyll* (1887). *A Babe in Bohemia* (1889; 3d ed., 1913); *Eighteenth Century Colour Prints* (1900); *Life of John Raphael Smith* (1902); *The Lives of James and William Ward* (1904); *Pigs in Clover* (1903; 2d ed., 1913); *Baccarat* (1904); *The Sphinx's Lawyer* (1906); *A Coquette in Crape* (1907); *The Heart of a Child* (1908; 2d ed., 1913). *An Incomplete Etonian* (1909). *Sebastian* (1909); *Let the Roof Fall In* (1910). *The Story of Emma, Lady Hamilton* (1910); *Joseph in Jeopardy* (1912; 2d ed., 1913); *Concert Pitch* (1913); *Full Swing* (1914).

DANBY, THOMAS OSBORNE, EARL OF (1631-1712). An English statesman, Duke of Leeds after 1694. He entered Parliament in 1665, with Buckingham attacked Clarendon in 1667, and became Treasurer of the Navy in 1671. In 1673 he was appointed Lord High Treasurer and in 1674 was created first Earl of Danby. During five years of power he showed himself a venal and unscrupulous politician and was party to Charles II's shameful negotiations with Louis XIV of France. In 1678 he was accused of carrying on treasonable negotiations with France—partly as a result of Louis XIV's intrigues against him—and imprisoned in the Tower, with some interruptions, for five years, his conviction being delayed by repeated dissolutions of Parliament. The marriage of Mary, daughter of the Duke of York, to William of Orange was due mainly to his persistent efforts,

and upon the accession of William III in 1689 he became President of the Council. He was impeached for bribery in 1695, but the charge was not pressed for lack of evidence.

DANCE, GEORGE, JR. (1741-1825). An English architect, born in London. He was associated with his brother Nathaniel in the foundation of the Royal Academy, of whose original members he was for several years the last survivor. Newgate Prison was rebuilt in 1770 from his plans, and the front of the Guildhall was also designed by him. In later life he exhibited chalk portraits.

DANCE OF DEATH. See DEATH, DANCE OF. **DANCETTE**, *dān-set'* (Fr., irregular formation from Lat. *dens*, tooth). One of the lines of partition in heraldry, which differs from indented (q.v.) only in the greater size of the notches. The indentations where the division is *per fess dancette* never exceed three in number.

DANCING (from *dancer*, from OF. *dancer*, *danser*, Fr. *danser*, to dance, from OHG. *danōn*, to drag, from *dansan*, OS. *thinsan*, to drag; connected with Lat. *tenuis*, cord, Gk. *relaxō*, *teinein*, Lith. *tensti*, Skt. *tan*, to stretch). The origin of dancing may be traced to a universal desire of expressing emotion by action. At a later period comes the element of pantomime, the suggestion of an *idea* by means of motions. As far into antiquity as history reaches, every dance, whether belonging to civilized or to savage nations, was accompanied by music, or by rhythmic beats on the drum, shells, rattle, sticks, or by clapping of hands. Frequently the dance was accompanied by chants or songs. Records show in a general way that in the very earliest times people danced and sang at the same time; afterward some danced while others sang an accompaniment, and finally musical instruments took the place of voice accompaniment. Ultimately music and the dance separated, the former improving and the latter deteriorating.

A consideration of savage dances as we find them at present (and it is remarkable how world-wide are the principal forms) will give us a general idea of dancing before the beginnings of civilization. Folk dancing may be divided into three groups—*social*, *warlike*, and *religious*. Under the first may be included all comic and erotic dances. Under the second we have those dances which were used to inspire the warriors before a battle, to celebrate a victory, or to imitate the motions of animals after a successful hunt. The *religious* class comprises medicine, incantation, and mystery dances. Although this general classification does not by any means exhaust the list of savage dances, it will be found that all others are derivative or of merely local importance. In all forms of savage dancing exactness is insisted upon. Each dance has its particular step, and among certain tribes mistakes on the part of the performer are sometimes punished by death. This insistence on absolute precision is characteristic of their idea of dancing. It is a serious business, and even in comic dances the performer maintains an air of absolute gravity. The separate forms of savage dances are too numerous to describe, but of greatest importance are the religious ones. A common custom is the dancing of women while the men are away at war. It is a sort of prayer, for they continue it day and night, believing that by so doing they protect the warriors from evil spirits and from danger. The medicine dances have two purposes—one to

ward off harmful influences; the other, strange as it seems, to keep the patient awake. This latter motive is explained by the belief of some savages that when a man is asleep his soul temporarily leaves his body. When he dies, the departure of his soul is final; if, then, the sick man falls asleep, his soul may take advantage of the opportunity to go away and not return; and consequently the most heroic measures are employed to keep him awake. However, all such ideas apply to particular tribes and are by no means universal. Dancing is universal, but the motives vary from tribe to tribe. In the savage mysteries, as in the Greek, dancing plays an important part; but so great and universal is the secrecy maintained about them that we know practically nothing of the elaborate dances used. One of the most sacred rites is the initiation of a lad to manhood. Sword, snake, and fire dances are especially developed among the American Indians.

Ancient Dances. In Egypt dancing reached a state of considerable excellence, for, although Egyptian dances were monotonous and unimaginative, the use of the body and of the hands and arms was carried to great perfection. Their most important dances—those in honor of the dead—were slow and gliding, but they had also many lively forms. Being almost entirely religious, most of their dancing consisted of men and women in procession. The *pirouette* in particular was developed in Egypt about 4000 years ago. As dancing was never, at least in the early and middle empires, practiced by the higher classes, its cultivation was carried on wholly from the religious and spectacular standpoints. See EGYPTIAN MUSIC.

Hebrew dancing was essentially a religious rite. It was an act of praise, and no religious festival or feast was complete without dances. Miriam, leading out the women in a dance, is typical of a form used in Arabia to-day. It should be noticed that each sex danced by itself, and that in this particular Hebrew dancing differed from its Egyptian prototype. See HEBREW MUSIC.

When we come to Greece, we approach the golden age of the art of dancing. Here for the first time it ranked with poetry and music, and, as Lucia expresses it, dancing and music were "the married pair." This relation was known as *orchēsis*. Heretofore dancing had represented emotions; now it was also made to represent ideas, and pantomime arose. Hands and arms were used still more than legs; but an atmosphere of gayety and expressiveness foreign to Oriental nations was created. The Greeks were a cheerful nation, whose sense of dignity did not interfere with their dancing, as it did in the case of the Romans; and as long as their morality remained unshaken the dance retained its purity. It was at first religious, then educational, and finally popular. There were four great classes of sacred dances—the *Emmelcia*, the *Hyporchēma*, the *Gymnopædia*, and the *Endymatia*. From these four types the later forms were derived. The characteristics of the first were its gentle gravity, strength, and nobility. It was danced without the support of either a chorus or a voice. The second class was danced by both men and women and was of a dignified, elevated character, usually with a chorus. The *Gymnopædia* was a favorite of the Lacedæmonians in the festivals of Apollo. It was danced by youths and was often a pre-

liminary to the wild Pyrrhic dance. In the last, the *Endymatia*, the performers wore most brilliant clothes, and this was the first of all the sacred dances to lose its sacred character and become merely a popular dance. The military dances came later and were principally educational. They were divided into two groups: (a) Pyrrhic and (b) Memphitic. The first was really a military pantomime and was used especially at festivals in honor of Minerva. It was danced by both men and women, was wild and rapid, and finally degenerated into the rites of Bacchus. The Memphitic was less warlike and wild, but its general character was the same. On the Greek stage there were tragic, comic, and satiric dances. The costumes and scenic arrangements were often elaborate, and the evolutions were accompanied by choral song. The forms were multitudinous, and the performers became so adept in the expression of emotions that the sculptors and painters of Greece selected them as their models, and it is from Greek sculpture we get most of the history of the Greek dancing. Although the pantomime was introduced first in Greece, it never reached the height of perfection which characterized it among the Romans.

Rome borrowed her dances, but adapted and made them more vivid. The *Beltecrepa* was a war dance said to have been invented by Romulus. The Salian dance was the original of many later forms and was danced by the priests of Mars. Later the Romans took some forms from Etruria and still others from Greece. One of the most interesting of their dances was the May-day dance, which corresponded to the flower dance of the Greeks. It is really the original of the old English May-day sports, for, as in England, the youths and maidens danced out into the fields, gathering flowers and branches, returning to the city again to continue their dancing. Upon the deterioration of Greek power Rome inherited its arts, and among them its dances, to which she added more pantomime and an increasing use of the saltatio, or leap. In the reign of Augustus the dance was introduced into the theatre. It became widely popular, there being at the time about 3000 foreign women dancers in Rome. At this time pantomime had reached its height, fable, history, poetry, all being perfectly expressed in mute action. The most cultured persons studied the art; but under Nero and his successors the decline began, dancing became exaggerated and licentious, and, falling into disrepute, was shunned by the higher orders.

Early and Mediæval Dances. After the fall of Rome dancing as an art practically disappeared. Christianity at first encouraged it as an inheritance from the Jews; St. Basil recommended the practice of the dance on earth because it was the principal occupation of the angels in heaven, and sacred dances were given on feast days and later every Sunday. In reality they were hardly so much dances as processions, each sex going through the evolutions separately. Gradually, however, they degenerated from their solemn character, and in 692 were expressly forbidden by the Church, though they still lingered in some localities for a considerable length of time. There are curious survivals of these old church dances, such as *Los Sesos* (q.v.), which is still performed annually by the choir boys in the cathedral at Seville, on Corpus Christi and the Immaculate Conception; the

Giulia di San Paolino is a ritual dance performed on June 26, in front of the cathedral of Nola, near Naples, in honor of San Paolino, who, on his return from Barbary, was met by a procession of the citizens of Nola. Meanwhile the simpler forms of the dance had been preserved by the peasants of Gaul, who kept them alive until they were taken up by the knights and nobles. In Spain the heritage of dances left by the Romans was more or less imperfectly preserved. Even the Arab invasion could not completely destroy the old forms; and there are some dances used at present in Spain, such as the *Turdion* and *Gibidana*, which date from about the twelfth century. Liveliness is characteristic of early as well as later Spanish dances.

Dancing in Germany and England developed along the lines originated by the barbaric nations which governed their early history. In England the egg dance and the Carole were derived from Saxon sources. The Morris dance was introduced in the reign of Edward III. All English dances are lively and varied in motion. In Germany, war, funeral, and harvest dances were among the earliest popular kind, and with the formation of the guilds each trade adopted its characteristic dance. Hans Sachs gives an excellent description of the Schönpart, which was a carnival dance peculiar to the city of Nuremberg. From the thirteenth century on, each class of society had its own dances, but there were two general classes—the "circular dance" and "the measure." The first was a rapid, uneven sort of dance, the second, a slow, gliding movement.

Modern Dances. The revival of dancing as an art began in Italy in the fifteenth century. The Renaissance awoke an interest in dancing as well as in the other arts, and ballets were given on an elaborate scale. Catharine de' Medici introduced the fashion into France, and from that time on France has led the world in the refinement of its dances and the gracefulness of its performers. It borrowed dance forms from almost every civilized country, but so adapted and changed them that their value was immeasurably increased. The origin of modern French forms may be traced to the *dances basses* and the *dances hautes* of the sixteenth century. The former were so called because of their slow, even motion; they were practiced by the nobility. The *dances hautes* were lively, jumping dances and were performed only by the country people and the lower classes. Later the *gallard*, *courante*, and *volta*, which were of a more lively character than the old court dances, were introduced; and still later the *branle* became popular. It was a dance of exceedingly varied character, each province having its own form, the *passepied* of Bretagne and the *minuet* of Poitou being brances. Court entertainments had developed into formal ballets, and Richelieu gave many famous performances during the reign of Louis XIII, while Louis XIV was himself an enthusiast of the dance, founding in 1661 the Academy of the Dance. In the seventeenth century many of these court dances were enjoyed for the sake of the music alone, and the idea arose of playing several of them in succession as a merely instrumental entertainment. Out of this custom originated the suite. The suites of Bach, Handel, and Corelli contain excellent examples of some of these old dances. In Italy these groups of dances were early known as

Sonate da Camera. As the classic composers used these old dance forms, so modern composers have utilized more recent dances in their compositions. Thus the *csárdás* is found in Liszt's *Hungarian Rhapsodies*; the *seguidilla* in Bizet's *Carmen*; and there is a charming series of Spanish dances in Massenet's *Le Cid*. The list of national dances is large, but the most representative are the *seguidilla*, *cachucha*, *fandango*, and *bolero* of Spain, the *tarantella*, the *saltarello*, and the *forlana* of Italy; the *mazurka* and the *polonaise* of Poland, the *cancion* of Russia; the *reel* and the *Highland Fling* of Scotland; and the *jig* in Ireland and Wales. Numerous classes of national dancers have arisen, of which the Bayederes or Nautch girls in India and the Geishas in Japan are well-known examples. In all the Eastern countries the dance is really a sort of pantomime containing a series of gestures, postures, and mimeries.

Of the more popular modern dances, the *quadrille* is probably the oldest. Its recent development dates from 1815, but before that time it was common in Europe for centuries. The *lancers* was invented in 1836; the *polka* was introduced about 1835; and the *waltz*, from Germany, about 1795. The *two-step* is of American origin. During the nineteenth century, owing to the growing popularity of the dance as a theatrical entertainment, the purely social variety has tended to follow the theatre, as it has not done before. Until 1850 the ballet reigned supreme, and private dancing was popular, but with the decline of the stage type in favor of the high kickers and skirt dancers, the waltz, too, which had reigned supreme in social life, became spiritless and out of joint with the times. Of course, in countries like Spain, where the dance is part of the national life and not a social occupation, there was no change. In England, France, and America during this period the dance was engaged in perfunctorily at formal balls, and it was not until the introduction of the two-step about 1890 that interest revived. A few years later, in 1896, Isadora Duncan, a young American girl, after having received little recognition in America, appeared in France in a revival of classic dances and took Paris by storm. After her followed Maud Allan and Adeline Genée. Ruth St. Denis then gave her interpretation of Oriental dances, most famous of which was the Nautch dance. With the visit of ballet performers from the Russian Imperial School to other European capitals, public interest began to revive. In 1911 the "negroid and animal" dances began by the introduction of the *turkey-trot* in San Francisco, Cal. In its train followed the *bunny hug*, the *grizzly bear*, the *Texas Tommy*, and others, all variations of the *turkey-trot*, which spread rapidly over Europe and America. Even more popular proved the *tango* (Tango Argentina), a dance of doubtful character from the Argentine Republic, which being expurgated created a *dansomania* on the Eastern and Western continents. For a discussion of the development of the *ballet*, see that article. There is no authoritative and comprehensive history of dancing, but the best works are: Grove, and collaborators, *Dancing* (London, 1895); Vuillier, *A History of Dancing*, trans. from the French (New York, 1897); Giraudet, *Traité de la danse* (Paris, 1900), which gives exact descriptions of a great number of dances; Cahusac, *La danse ancienne et moderne* (La Hague, 1754), which,

although completely out of date, contains much of historical value; and Emmanuel, *La danse grecque antique d'après les monuments figurés* (Paris, 1896); Flicht, *Modern Dancing and Dancers* (London, 1912); Caffin, *Dancing and Dancers of Today* (New York, 1912). See also ALLEMANDE; BAYADERE; BOLEERO; CACHUCHA; CANARIE; CANCAN; CARMAGNOLE; CHACONNE; CORROBOREE; COTILLON; COUNTRY DANCE; COU-RANTE; CSÁRDÁS; EGG DANCE; FANDANGO; FARANDOLE; FIRE DANCES; FLOWER DANCE; GALOP; GAVOTTE; GEISHA; HIGHLAND FLING; HORMOS; HORNPIPE; JIG; JOTA; KIRMESS; LANCERS; MAY DANCE; MAZURKA; MEDICINE DANCES; MINUET; MORRIS DANCE; NAUTCH; PASSEPIED; PAVANE; POLKA; POLONAISE; PYRRHIC DANCE; QUADRILLE; REDOWA; REEL; RIGADON; SALMON DANCE; SARABANDE; SCHOTTISCHE; SEGUIDILLA; SICILIANA; COVERLEY, SIR ROGER DE; SNAKE DANCES; SUN DANCES; SKIRT DANCES; STRATHSPEY; SWORD DANCES; TAMBOURIN; TARANTELLA; TARASQUE, LA; TORCH DANCE; WALTZ.

DANCING FAUN. An antique bronze representing a faun dancing and snapping his fingers to mark the time. It was discovered in 1853 in a house in Pompeii, hence known as the House of the Faun.

DANCING GIRLS. See BAYADERE; GEISHA; NAUTCH.

DANCING MANIA. A form of epidemic disorder allied to hysteria (q.v.), and evidently the result of imitative emotions acting upon susceptible subjects, under the influence of a craving for sympathy or notoriety. There is little doubt that imposture entered to a considerable extent into all the epidemic forms of the dancing mania, which indeed were usually attended by consequences that showed clearly the presence of impure motives; but there is also evidence that in many cases the convulsive movements were really beyond the control of the will, whatever may have been the original character of the motives that promoted them. Epidemics of this sort were common in Germany during the Middle Ages, in Italy a somewhat similar disease was ascribed to the bite of a spider called the tarantula (see TARANTISM), and similar convulsive affections have been witnessed in Abyssinia, India, and even in comparatively modern times and in the most civilized countries in Europe, under the influence of strong popular excitement, especially connected with religious demonstrations. The true dancing mania of the Middle Ages, however, prevailed chiefly in the crowded cities of Germany.

In July, 1374, there appeared at Aix-la-Chapelle assemblies of men and women who began to dance on the streets, screaming and foaming like persons possessed. The attacks of this mania were various in form, according to mental, local, or religious conditions. The dancers, losing all control over their movements, continued whirling in wild delirium till they fell in extreme exhaustion, and groaned as in the agonies of death; some dashed out their brains against walls. When dancing, they were insensible to external impressions, but were haunted by visions, such as of being immersed in a sea of blood, which obliged them to leap high, or of seeing the heavens open and the Saviour enthroned with the Virgin Mary. The frenzy spread over many of the towns of the Low Countries. Troops of dancers, inflamed by intoxicating music and followed by crowds, who

caught the mental infection, went from place to place, taking possession of the religious houses and pouring out imprecations against the priests. The mania spread to Cologne, Metz, and Strassburg, giving rise to many disorders and impostures and much profligacy. Exorcism had been found an efficacious remedy at the commencement of the outbreak; and in the beginning of the sixteenth century Paracelsus, that great reformer of medicine, applied immersion in cold water with great success. At the beginning of the seventeenth century the St. Vitus's dance, as the affection was called (see CHOREA), was already on the decline; and it now occurs only in single cases as a sort of nervous affection. For a detailed account of the phenomenon, consult Hecker, *The Dancing Mania of the Middle Ages* (3d ed., London, 1859), from which much of the above account is abridged.

DANCLA, dän'klä', JEAN BAPTISTE CHARLES (1818-1907). A French dramatist and composer. He studied under Baillot, Halévy, and Berton, and gained many prizes for his proficiency. In 1857 he was appointed professor of the violin at the Paris Conservatory and had many eminently successful pupils. He was famous for his execution and tone as a player, as much as for his many successful compositions, notably his *Etudes*, and exercises for the violin.

D'ANCONA, ALESSANDRO. See ANCONA.
DANCOURT, dän'kōōr', FLORENT CARTON (1661-1725). A French dramatist and actor. He was born at Fontainebleau, Nov. 1, 1661, and was educated by the Jesuits. He practiced law for a time, but after marrying an actress, Thérèse Lenoir de la Thorillière, took to the stage, and in 1685 the two appeared as actors at the Théâtre Français with popular success and royal favor. In that year his first play, *Le notaire obligé*, won applause. It was followed by many others, of which *Le chevalier à la mode* (1687) is his best. In 1718 he retired from Paris and the stage and occupied his declining years with a metrical version of the *Psalms* and a sacred tragedy. He died at Courcelles (Indre et Loire), Dec. 6, 1725. His rather farcical comedies are best when dealing with middle and low life and the peasantry. They are easy and witty in dialogue, realistic in treatment, and not infrequently introduce events and persons of passing notoriety. His two daughters, Manon and Mimi Dancourt, also became distinguished members of the Théâtre Français. Dancourt's *Works* were collected in 12 vols. (1760), his select *Works* in 5 vols. (1810), and, in 1884, an edition of Dancourt's best plays appeared under the title of *Théâtre choisi*, with a preface by F. Sarcey, the eminent dramatic critic. Consult Lemaitre, *La comédie après Molière et le théâtre de Dancourt* (Paris, 1882).

D'ANCHE, dän'kr'. See ANCHE.

D'ANDELION (Fr. *dent de lion*, tooth of a lion, referring to the teeth on the leaves), *Taraxacum officinale*. A stemless perennial or biennial plant of the family Compositae, native to Europe and Asia, and now common in all temperate countries. A red-seeded dandelion (*Taraxacum erythrospermum*) occurs in dry situations from Maine to Pennsylvania. This plant is usually smaller and the leaves more divided than those of the common dandelion. The dandelion is used to a considerable extent, both in Europe and the United States, for greens, and the blanched leaves for salads. Several im-

proved varieties, mostly of French origin, are in cultivation. The root is employed in medicine and is sometimes ground and used to adulterate coffee. The plant called the fall dandelion is *Leonodon autumnalis*. For illustration, see **SALAD PLANTS**.

DANDIE DINMONT. See **TERRIER**.

DANDIN, dān'dēn. A Sanskrit author who is believed to have flourished in the latter part of the sixth century A.D. He composed a well-known Sanskrit novel, or series of stories, entitled *Dasa-kumāra-carita*, or *Adventures of the Ten Princes*, a sort of romance of roguery. He is also the author of a valuable rhetorical treatise entitled *Kāyādarsa*, or *Mirror of Poetry*, and some scholars, like Pischel, have sought to ascribe the Sanskrit play *Mrecha-katkā* (q.v.) to his pen. Dandin was probably the earliest of the Sanskrit novelists whose works are extant, preceding Subandhu, the author of the romance *Vāsavadattā*, which formed the model for Bana's *Kādambarī*. Dandin's works have been edited several times: *Dasa-kumāra-carita* (London, 1846; ed., with native commentaries, Bombay, 1883-89; also, with notes by Bühler and Peterson, ib., 1873-91), and translated into English by Jacob, under the title *Hindoo Tales* (London, 1873), by Bhattacharyya (Calcutta, 1899—incomplete), into French by Fauche (Paris, 1862), and into German by J. J. Meyer (Leipzig, 1902). There is an edition with German translation of the *Kāyādarsa* by Bohtlingk (ib., 1890).

DANDOLO, dān'dō-lō. A famous Venetian family, already powerful in the seventh century, which furnished four doges.—The most illustrious of its members was ENRICO DANDOLO, born about 1120. Eminent in learning, eloquence, and knowledge of affairs, he ascended from one step to another until in 1171 he was sent as Ambassador to Constantinople and in 1193 became Doge. In this latter capacity he extended the bounds of the Republic in Istria and Dalmatia, defeated the Pisans, and took part in the Fourth Crusade (q.v.). By this Venice obtained great possessions in the Ionian Sea and the Archipelago, several harbors and tracts of land on the Hellespont, in Phrygia, the Morea, and Epirus, and also, by purchase, the island of Crete. Soon after the conquest of the Byzantine Empire by the Crusaders Dandolo died (June, 1205) in Constantinople and was buried in the church of St. Sophia. His monument was destroyed by the Turks at the taking of Constantinople in 1453.—ANDREA DANDOLO, Doge from 1343 to 1354—was the author of a Latin chronicle recording the history of Venice from the pontificate of St. Mark to the year 1339 in 10 books. The last seven books are printed in Muratori, *Rerum Italicarum Scriptores*, vol. xii. Consult Kretschmayr, *Geschichte von Venedig*, vol. i (Gotha, 1905); Simonfeld, *Andreas Dandolo und seine Geschichtswerke* (Munich, 1876).

DANDOLO, VINCENZO, COUNT (1758-1819). An Italian chemist and agriculturist. He was born in Venice, studied at Padua, and became a chemist in his native city. When Venice came under Austrian rule, he went to Milan, where he became a member of the Grand Council of the Cisalpine Republic. He went to Paris in 1799, but soon afterward returned to the vicinity of Milan and engaged in scientific agriculture. In 1805 Napoleon made him Governor of Dalmatia, where he proved himself an ex-

cellent officer. In 1809 he returned to his estate near Varese, where he contributed much to the progress in silkworm culture, and distinguished himself by draining marshes and introducing better methods of agriculture. He published *Fondamenti della fisiocchimica applicati alla formazione de' corpi e de' fenomeni della natura* (6th ed., 1796), and *Il buon governo de' bachi da seta* (1816).

DANDRIDGE, N (ATHANIEL) PENDLETON (1846-1910). An American surgeon, born in Cincinnati, Ohio. He graduated from Kenyon College in 1866, studied at the Medical College of Ohio and also in Paris and in Vienna, and received his M.D. from the College of Physicians and Surgeons (Columbia) in 1870. From 1880 to 1907 he served as professor of surgery at Miami Medical College, and he was surgeon to the Cincinnati Hospital and to the Episcopal Hospital for Children. In 1903 he was president of the American Surgical Association.

DANDRUFF. See **HAIR**: **PITYRIASIS**.

DANDURAND, dān'du-rān', RAOUL (1861-). A Canadian lawyer and statesman, born at Montreal and educated at Montreal College and Laval University. He studied law, was admitted to the bar in 1883, and rapidly gained an extensive practice, being acknowledged as one of the leaders of the provincial bar. He was prominent as a local organizer of the Liberal party, and served as member of the Royal Commission on Education in the Province of Quebec in 1910. He was appointed a member of the Senate in 1898, was Speaker of the Senate in 1905-09, and in the latter year became a member of the Privy Council. He published a treatise on criminal law and manuals for police officers and justices of the peace.

DANDY FEVER. See **DENGUE**.

DANE, GREAT, or GERMAN BOARHOUND. See **HOUND**.

DANE, NATHAN (1752-1835). An American legislator and jurist, born in Ipswich, Mass. He graduated at Harvard in 1778, studied law in Salem, began to practice in 1782 at Beverly, and was successively a member of the Massachusetts House of Representatives, the Continental Congress, and the Massachusetts Senate. In addition, he was appointed on various commissions to codify or revise the laws of the Commonwealth and was judge of Common Pleas. While in Congress, he was a member of the committee appointed to draw up an ordinance for the government of the Northwest Territory and made the original draft of that document, though in a larger sense it seems that Manasseh Cutler (q.v.) probably deserved the credit of authorship. The question of the relative credit due to each man has, however, been much debated. He was a member of the Hartford Convention (q.v.) in 1814. Dane contributed \$15,000 towards founding the Harvard Law School, and the Dane professorship of law was named in his honor. He published *A General Abridgment and Digest of American Law* (1823-29) and an *Appendix* (1830).

DANEAU, or **DANÆUS**, dā'nō', LAMBERT (c.1530-95). A French Reformed theologian. He was born at Beaugency; studied law at Orléans, Paris, and Bourges; became a Protestant in 1560; was preacher in France (1561-72); fled to Geneva on the outbreak of the St. Bartholomew massacres (Aug. 24, 1572), preached in various places, was pastor and

professor of theology at Leyden (1581-82), and died at Caspree, Nov. 11, 1595. He was the author of many learned volumes, the most famous of which is his *Ethica Christiana* (1577; 7th ed., 1640), the first Protestant attempt at a system of morals apart from dogmatics. For his life, consult Paul de Felice (Paris, 1882).

DANEBOG, dān'e-brōg, ORDER OR. The second in rank of the Danish orders, instituted by Valdemar II in 1219. According to tradition the order was founded in honor of the banner of Denmark, which graciously fell from heaven for the inspiration of the army. In 1500 the order was suppressed, but reinstituted in 1671, by Christian V. In 1808 Frederick VI made it an order of merit for all the Danish people. The Danebog has four degrees, besides a class composed of those on whom the cross has been bestowed for certain meritorious services, but who are not members strictly of the order. These are known as "Danebogsmænd." The decoration of the order consists of a cross of gold *pattée*, enameled with white, and bordered with red or gold. Consult Werlauff, *Om Danebog og Danebogorden* (Copenhagen, 1872).

DANEFF, dā'nēf', STOJAN (1858-). A Bulgarian statesman, born in Shumla and educated in Bohemia and at Heidelberg and Paris. He became a member of the Commission of Codification after the Russo-Turkish War and in March, 1901, entered the cabinet as Minister of Education and the Interior.

He was Prime Minister and Minister of Foreign Affairs from January, 1902, to May, 1903, heading a Tzankovist (anti-Stamboulovist) cabinet and floating a foreign loan. In January, 1910, he was sent to Constantinople and secured momentary relief from the outrages of the Young Turks in Macedonia. In March, 1911, he formed a cabinet which survived only a few days. Then, when Gueshoff's ministry, a coalition of the Progressive and Nationalist parties, came into power, Daneff became President of the Chamber (Sobranje). He was one of the three Bulgarians delegated in November, 1912, to carry on the negotiations with Turkey over the armistice and one of the three sent in December to London for the Balkan-Turkish Peace Conference, in which he and Venezelos of Greece were the leading figures. On May 30, 1913, he signed for Bulgaria the Peace of London between Turkey and the Balkan allies. In June of the same year he formed a new cabinet in Bulgaria.

DANEGELD, dān'gēld, or **DANEGOLD**, dān'gōld' (AS. *Dene*, Danes + *geld*, *gild*, payment. Goth. *gild*, tax, OHG. *gelt*, Ger. *Geld*, money). A tax of two shillings upon each hide of land, first levied by the Witan under the Saxon King Ethelred the Unready, in 991. It was probably the first money taxation imposed in England and was used as tribute money to buy off the Danes. The tax was collected five times within 21 years. Edward the Confessor abolished the impost, but William the Conqueror revived it and, in 1084, demanded from each hide of land, not held by himself in demesne, or by his barons, a sum of six shillings, or three times the old rate. Stephen (1135-64) promised to abolish Danegeld, but it was not repealed till Henry II's time (1163). A similar tax on land, however, was still levied under another name. See *CARUCATE*.

DANELAW, or **DANELAGH**, dān'lā' (AS. *Dene*, Danes + *lagu*, Eng. law). The name

applied to that part of England which by the provisions of the Treaty of Wedmore or Chippenham, in 878, was ceded to the Danes by Alfred the Great. It included Northumbria, East Anglia, Essex, and the northeastern part of Mercia, the boundary line being constituted partly by the rivers Thames, Lea, and Ouse and by the ancient Roman road of Watling Street. Within this region the laws and customs of the Danes were distinctly recognized and were later enumerated by Canute. The term "Danelaw" is used in contradistinction to Mercian and West Saxon law until after the reign of Stephen (1135-54).

DANENHOWER, JOHN WILSON (1849-87). An American Arctic explorer, born in Chicago. He graduated at the United States Naval Academy in 1870, served for a time in the line and on the coast survey, and in 1878 joined the *Jeannette* expedition for polar research, commanded by Lieutenant De Long, U. S. N. The ship was crushed in the ice, June, 1881, in lat. 77°, long. 157° E. Traveling by sleds, the crew reached Bennett's Island, July 27, whence they embarked in three whaleboats for the Siberian coast. The one containing Lieutenant Danenhower and 10 others, in command of Chief Engineer G. W. Melville, arrived at the Lena delta in September. Danenhower reached New York in June, 1882, and was compelled by an affection of the eyes to desist from further explorations. He published *Narrative of the Jeannette* (1882).

DANES ISLAND. A small island off the northwest coast of Spitzbergen (Map: Arctic Region, G 4). Andrée started from here for the North Pole, July 11, 1897.

DANEWORT. See *ELDER*.

DANFORTH, MOSELEY ISAAC (1800-62). An American engraver, born in Hartford, Conn. He was one of the founders of the New York Drawing Association (1825) and of the National Academy of Design (1826). He lived in London for 10 years, during which time he executed some well-known drawings of the Elgin Marbles and many of his best plates, among which are the "Sentry Box," "Don Quixote," and portraits of Washington Irving, Walter Scott, after Leslie, and others. On his return to America he worked principally upon bank-note engraving and became vice president of the American Bank-Note Company.

DANGEAU, dān'zhō, PHILIPPE DE COURCILLON, MARQUIS DE (1638-1720). A French courtier. After commanding the King's regiment he became aid-de-camp to Louis XIV, and in this capacity took part in the principal campaigns of the period. In 1667 he was appointed Governor of Touraine. He was a favorite at Versailles, enjoyed the fullest confidence of the King, and was the patron of Boileau, who addressed to him the well-known satire on the nobility. He was frequently sent on diplomatic missions, and he encouraged the marriage between Mary of Este (Modena) and James II of England. The *Journal* of Dangeau, a diary from 1684 to his death, is a dull but valuable historical document; the best edition is in 19 vols. (Paris, 1854-60).

D'ANGOULÊME, dān'gō'lam'. See *ANGOU-LÊME*.

DANHAUSER, dān'hōu-zēr, JOSEPH (1805-45). An Austrian historical and genre painter. He was born in Vienna, studied at the Vienna Academy under Peter Krafft, and first appeared

as an historical painter with scenes from the *Rudolph von Habsburg* (Vienna, 1824) of Johann Ladislaus Pyrker. At Pyrker's invitation he went to Venice, where he studied the great Venetian masters. On his return he determined to attempt genre subjects, in which he was very successful. He had abundant humor and fancy and chose his subjects generally from the life of the upper bourgeoisie in old Vienna. He introduced into his pictures a personal note, hitherto lacking in that style of painting, which with their fine and delicate color distinguishes them from those of his contemporaries. He also painted religious pictures, including "The Martyrdom of St. John" (1834), in the cathedral of Erlau; "Hagar and Ishmael" (1835), in the Vienna Museum. Among his genre pictures are "The Gourmand" (1836), "The Grandmother" (1843), both in the Vienna Museum, and "Liszt at the Piano" (1840).

DANICAN, dá'né'kän', FRANÇOIS ANDRÉ. See PHILIDOR, FRANÇOIS ANDRÉ DANICAN.

DANIČIĆ, dá'né-chich, GJURO (1825-82). A Servian philologist, born in Neusatz. He studied at Pesh and Vienna, became librarian of the National Library at Belgrade, and afterward professor of the history of literature in the University there. In 1877, under commission of the Academy of Sciences at Agram, he began the compilation of the Servian-Croatian Dictionary, of which he finished but three parts. His works further include a Servian grammar (1863; 8th ed., 1892), a concordance to old Servian literature (1863; 3d ed., 1864), and a history of the Servian and Croatian languages (1874).

DANIEL (Heb., God is my judge). In the Book of Ezekiel (xiv. 14, 20, and xxviii. 3) a personage with this name is introduced between Noah and Job as a well-known type of wisdom and righteousness. If these passages were written by Ezekiel, they would seem to show that Daniel was already, before the fall of Jerusalem in 586, regarded as an ancient hero, but some scholars consider them as late interpolations based on acquaintance with the Book of Daniel. There is a reference to Daniel's experience in the lions' den in 1 Mace. ii. 60, but this book was not written before c.100 B.C., and it is held by many interpreters that the speech of Mattathias is the work of the author or has at least been edited by him. Daniel is not mentioned among the famous men whose praise is sung in Eccles. xiv. ff. It is not necessary, however, to suppose that the author was ignorant of Daniel, as in the case of Ezra, he may have had reasons for leaving him out. In the book that bears his name Daniel is represented as a Jewish captive carried to Babylon in the third year of Jehoiakim (i.e., 606 B.C.), who through his supernaturally imparted wisdom rose to a position as ruler of the Province of Babylon and chief of the wise men of Babylon in the time of Nebuchadnezzar (ii. 48), and as one of the three presidents who were set over the satraps in the reign of Darius the Mede (vi. 2). According to i. 21 his career extended until the first year of Cyrus; according to x. 1 he is said to have had visions as late as the third year of Cyrus, but the oldest Greek version has the first year of Cyrus, and the editorial superscriptions may be late. In Matt. xxiv. 15 and Mark xiii. 14 he is called "Daniel the Prophet." Many scholars entertain grave doubts as to the historic existence of Daniel

because of the character of the book that forms our only source. See DANIEL, BOOK OF.

DANIEL, BOOK OF. One of the canonical books of the Old Testament. In the Hebrew Bible it is not counted among the Prophets, but has its place among the Writings, or Hagiographa. (See BIBLE.) This is in harmony with the rabbinic arrangement of the triple canon at the end of the second century A.D., which is preserved in *Baba bathra*, 13 b. 14 a. On the other hand, the Greek version places the book after Ezekiel, and in the Latin Vulgate and all modern translations (except those made by Jews and some recently produced by Christian scholars, who follow the order in the Hebrew Bible) it appears as one of the four *propheta majores*. In all probability, this is more original, as Daniel is counted by Josephus as among the Prophets, and the New Testament refers to "Daniel the Prophet." The influence of the book in fanning the Messianic hope which led to so many disenchantments and its use in Christian apologetics naturally account for its relegation to the third canon. There is no reason to believe that any Jewish scholars of the tannaitic period looked upon it as later than the time of Ezra and therefore excluded it from the prophetic canon.

The book consists of 12 chapters: chaps. i-vi contain stories concerning Daniel and (chap. iii) his friends, vii-xii visions told by Daniel himself. The first chapter relates how Daniel was brought to Babylon by Nebuchadnezzar in the third year of Jehoiakim (606 B.C.). With Daniel are three other youths of noble descent—Hananiah, Mishael, and Azariah. Babylonian names are given to them in place of their Hebrew ones, Daniel being called Belteshazzar, while the other three are called Shadrach, Meshach, and Abednego. They are portrayed as being in the royal service, but also as steadfast in their fidelity to their God, declining to partake of the food provided for them for fear of polluting themselves. God rewards them for this, and when brought before the King they are found 10 times superior to the Babylonian magicians, Daniel excelling every one in the matter of visions and dreams. In the second chapter proofs are given of Daniel's supernatural wisdom, he saves the lives of the magicians as well as his own by his ability not only to interpret Nebuchadnezzar's dream, but also to tell him what the dream was. The King had seen a great image with its head of gold, and other parts of the body of silver, brass, and iron. The gold is interpreted to refer to the Babylonian Empire, the other three metals to the kingdoms that are to follow the Babylonian. The image is destroyed by a stone quarried without human intervention out of a mountain, and this destruction symbolizes the disappearance of all the kingdoms. The third chapter tells of the fiery furnace into which the three friends of Daniel are thrown because of their refusal to worship the golden image which Nebuchadnezzar had set up and how they came out of the furnace unscathed. In the fourth chapter Nebuchadnezzar issues a proclamation to all peoples of the world, declaring, in consequence of Daniel's success in interpreting another of his dreams, his intention of glorifying the King of Heaven. The dream itself consists of a vision of the uprooting of a great tree with its numerous branches, under which all birds have shelter and which feeds all mankind. The vision, as interpreted by Daniel, forebodes the downfall of the kingdom, and the

King himself is humbled by being bereft for a time of his reason and conducting himself like an animal. The fifth chapter recounts a great feast arranged by Belshazzar (q.v.), during which the mysterious writing appears on the wall as a punishment for the King's desecration of the sacred vessels of Jerusalem, which Nebuchadnezzar had brought to Babylon (i. 2). Daniel succeeds in reading and interpreting the handwriting, which predicts the overthrow of Belshazzar, who indeed is slain that very night. The crown passes to Darius the Mede. The sixth chapter introduces King Darius, who, at the instance of his nobles, issued a decree forbidding any one for the space of a month to pray to or ask a petition from any one except Darius. Daniel, as a pious Jew, accustomed to pray thrice daily, disobeys and is thrown into a den of lions. By divine protection Daniel escapes the fate of being torn to pieces. He is taken out of the den, and his accusers are thrown into it and at once are torn to pieces by the lions. The first of Daniel's visions (chap. vii) is of four beasts, the last having 10 horns, from each of which in turn supremacy is taken away, until it is finally given to one like a man, probably the angel Michael as the celestial representative of the Jewish people. In the second vision (chap. viii) he sees a ram pushing in all directions with its two horns, which are eventually broken through a he-goat with a notable horn between its eyes. In time the kingdom of the he-goat is broken, and in its place four other horns arise, and out of one of these comes forth a little horn which exalts itself even against the host of heaven and against God Himself, destroying His sanctuary and interrupting the daily service for 2300 evenings and mornings. In the third vision (chap. ix) the angel Gabriel appears to Daniel and explains that the 70 years of desolation prophesied by Jeremiah (xxv. 11; xxix. 10) will be 70 weeks (of years), after which the guilt of the people will be atoned for. In the last vision, which comes to him in the third year of Cyrus (chaps. x-xii), an angel reveals to Daniel glimpses of the future. Under veiled names the doings and fate of various kings are described. After the last of these has disappeared, the end comes when the heavenly kingdom is established, and the dead are raised—some to eternal glory, others to eternal shame. But Daniel is bidden to seal the vision until this time, and to go to his rest.

The book is written in two languages: chaps. i. 1-ii. 4a, viii-xii, are in Hebrew, while ii. 4b-vii are in Aramaic. The Aramaic is not of the Mesopotamian or Babylonian type, but is the Judæan dialect. Many theories have been propounded to account for the two languages. Some scholars have thought that the author began his work in Hebrew, but was led by his desire to reproduce the words of the Chaldeans accurately to change into the Aramaic, which they spoke, and then returned in chap. viii to the Hebrew in order to conceal from outsiders in the sacred tongue the allusions in the visions which were meant only for the wise men of his own people. A modified form of this view makes him wrongly suppose that the Chaldeans spoke Aramaic and were ignorant of the distinction between East and West Aramaic. Quite a number of scholars have suggested that the whole work was originally written in Hebrew, but that, some chapters having been lost through an accident, they were replaced by the Aramaic targum. Some think that the Hebrew text was still ex-

tant when the earliest Greek version was made which, in their opinion, represents it. Huet, Bertholdt, Marti, Wright, and Charles supposed that the entire book was written in Aramaic, but the beginning and the end translated into Hebrew in order to give it a place among the sacred books written in that language. The first suggestion of a diversity of origin as furnishing an explanation of the difference of language seems to have been made by Spinoza, who regarded the stories in ii-vi as having been drawn from Chaldean chronicles. Eichhorn maintained that ii. 4b-vii. 28 came from an earlier Aramaic work, while the Hebrew portion was written by an author living in the Maccabæan period. This view has been revived by Meinhold, Strack, Dalman, Torrey, and Sellin. These scholars regard i. 1-ii. 4a as having been translated from the Aramaic into the Hebrew, and vii as an Aramaic version of a Hebrew original, and they suggest that these translations were made to give the impression of unity and conceal the difference of origin. But if the author or editor sought to secure for his work canonical recognition, which is altogether improbable (see BIBLE, Canon), and deemed it necessary for this purpose that the Hebrew language should be used, it is strange that he should have translated so much and yet not all; and the evidence adduced to prove a translation one way or the other is not very convincing. A simpler theory would be that the storybook from which ii. 4b-vi comes was written in Aramaic, that vii was a later addition in the same language, that viii-xii formed an appendix written in Hebrew, and that an editor wrote i. 1-ii. 4a as an introduction to take the place of some other exordium in the storybook. Kennicott found a Hebrew text of the Aramaic parts in Codd. 240 and 512 and printed it in his Hebrew Bible from Cod. 240, but this is unquestionably a later translation from the Aramaic.

The early versions differ from the Masoretic text in that they combine also the Song of the Three Holy Children, the story of Susanna, and the stories of Bel and the Dragon. Besides, there is a very marked divergence between the earliest Greek version and Theodotion's translation which took its place in the Greek Bible, notably in chaps. iii-vi. It is found in Codex Chisianus, published in 1772, and in the Hexaplaric Syriac published in 1866. Already Eichhorn pointed out the superiority of its readings; while even this version clearly represents an annotated text, especially in iv, it is, in the judgment of some scholars, free from many accretions, both in iv and in v and vi, that disfigure the Masoretic text. On the longer additions found already in this version, which manifestly were translated from an Aramaic original, see DEUTEROCANONICAL BOOKS.

According to Jewish and Christian tradition, all parts of the book were written by Daniel. This tradition was rejected in the third century A.D. by the Neoplatonist philosopher Porphyry, who in the twelfth of his 15 books against Christianity maintained that the work was written in the time of Antiochus IV. His arguments have been in part preserved by Jerome, who attempted to refute them (Com. ad Danieleml). The same opinion has been held by some of the Anabaptists, Uriel d'Acosta, Anthony Collins, Corrodi, Eichhorn, and the majority of Protestant exegetes since. Hitzig and Farrar supposed on insufficient grounds that Onias IV was the author.

That the visions in viii-xii point with special emphasis to the situation in the early Maccabean period is the opinion of a vast majority of scholars, Catholic and Protestant. Among the latter it is generally held that they were also written at that time. The fourth kingdom in chap. vii is regarded by many Catholic and some Protestant interpreters as referring to the Roman Empire, and Legarde held that it was written c.70 A.D., in which he has recently been followed by Hertlein; but the majority of Protestant scholars assign this chapter also to the Maccabean period. There is less agreement as to the age of the stories in i-vi. While König, Behrmann, and Driver deem it sufficient to assume that they had long been current in Jewish folklore before they were written down together with the rest of the book, a separate origin in written form has long been suspected. Spinoza, Newton, and Beausobre thought of a distinct authorship for the Aramaic section. Eichhorn assigned the visions to the Maccabean age and the stories to an earlier period. Bertholdt, assuming that the whole book was originally written in Hebrew, divided it among 10 authors, and Barton, to some extent following along his lines, has suggested three or four. Lagarde thought of the different sections as political pamphlets. Meinhold assigned to the stories the date of c.300 B.C. More convincing are the arguments of Torrey to prove that chap. ii cannot have been written before or after the reign of Ptolemy III Euergetes (247-223 B.C.), and that therefore the Aramaic storybook was composed at that time. Cornely and Torrey have from different standpoints summed up the objections to the current assumption that Nebuchadnezzar, Belshazzar, and Darius are simply meant to symbolize the great persecutor Antiochus Epiphanes. On the other hand, a date in the middle of the third century is sufficiently late to account for the ignorance of the author concerning the period in which his hero was supposed to have lived. Nebuchadnezzar did not capture Jerusalem in the third year of Jehoiakim (606 B.C.): there was no interregnum of seven years in his reign (604-562); he had no son by the name of Belshazzar; there were no satraps in his reign. Bilsharurur was the son of Nabunaid, the last King of Babylon (556-539), who was not a descendant of Nebuchadnezzar: the last King of Babylon did not lose his kingdom to Darius the Mede, but to Cyrus: there was no Median Kingdom succeeding the Babylonian in Babylon, and history knows of no Darius the Mede. It has been indeed suggested that Nebuchadnezzar's "coming" to Jerusalem means his "starting" for Jerusalem in 606, which he reached in 597: that "son" and "father" mean "successor" and even distant "predecessor": that Belshazzar was another name for Evil Merodach or Nabunaid, and that Darius was another name for Cyaxares II, Gobryas, or Cambyse. But it can scarcely be claimed that any of these attempts to explain the difficulties is either ingenious or ingenuous. Many stumbling blocks may be removed by the textual criticism, but figures of Belshazzar and Darius the Mede are likely to belong to the original form of the stories, as well as the conception of these kings.

Clermont Ganneau's interpretation of the famous *Mene, Mene, Tekel, Upharsin* as names of weights "a mina, a shekel, and two half-minas" (*Journal Asiatique*, 1886, pp. 36 ff.), though ingenious and widely adopted, will have to be

abandoned, as the original text read *mene, shekel, peres*, and "tekel" does not mean "shekel" in Aramaic. The addition to the Aramaic storybook of a vision told by Daniel himself in the first person in the same language (chap. vii) is likely to have suggested the style of the Hebrew book which forms the appendix (chaps. viii-xii). In spite of Lagarde this vision probably was written in the year 165 B.C., though earlier than the visions in Hebrew, which seem to come from the end of November or the beginning of December of that year. The suggestion of Schmidt, that the one "like a son of man" (vii. 13) here, as elsewhere where a man-like being is spoken of, refers to an angel and in this case the angel Michael, taking the place in Jewish folklore of the god Marduk, has been adopted by Marti, Bertholet, and others. Chap. xi gives an historic sketch in the guise of prophecy, which shows a growth of accurate knowledge as the author advances towards the end of the year 165; but while a little help has come through Mattathias and Judas, the temple has not yet been recovered and dedicated, Baal Shamen (the Heaven God, Zeus Olympios) being still worshipped there. Bertholet and others have shown that much of the apocalyptic material of the book has a foreign origin, in Babylonian and Persian mythology. But its deep religious significance lies in the conception of a succession of world empires permitted to rule by divine providence until the time set for them to be followed by the Kingdom of the Saints of the Most High, and in the encouragement it gave to the maintenance of religious ideas that were threatened with obliteration through the influence of Hellenistic thought and customs.

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DANIEL, JUDGMENT OF. See SUSANNA, HISTORY OF.

DANIEL, dá'nyel', ANTONY (1601-48). A French Jesuit missionary in America, born at Dieppe. He became a Jesuit in 1621, came to Quebec with Samuel de Champlain in 1633, began his labors among the savages of Cape

Breton, and in 1634 was transferred to the Huron mission. In 1636 he returned to Quebec to teach in a seminary. Afterward he went back again to St. Joseph, or Tenaustayé, one of the largest Huron towns. On July 4, 1648, he had just concluded mass when the town was attacked by a band of the hostile Iroquois. He roused such defense as was possible and urged all that could to escape. As he came from the church and confronted the enemy, he overawed them by his calmly majestic bearing. A moment later, pierced by a bullet, he fell, and his body was burnt with his church. Consult Parkman, *The Jesuits in North America* (Boston, 1867).

DANIEL, ARNAUT. A celebrated French troubadour of the twelfth century, styled by Petrarch "Il gran maestro d'Amore" ('the great master of love'). He was born at Ribérac, Dordogne, was a jongleur at the court of Richard Cœur de Lion, and is said to have been acquainted with several distinguished troubadours, such as Bertrand de Born. He was the author of a number of amatory poems, which, although technically masterpieces of versification, are frequently characterized by an artificial straining after effects. Dante was indebted to him for several of his stanzas, and ranks Daniel far above Giraud de Borneil. An edition of his works was published by Canello under the title *La vita e le opere del trovatore Arnaldo Daniel* (Halle, 1883).

DANIEL, DÉNÉ-ÉL, ERNST VON (1843-). A Hungarian politician, born at Ellemér, County of Torontál. He studied law at Budapest, became judge lateral in 1868, and in 1870 a Liberal member of the Hungarian Parliament. From 1895 to 1899 he was Minister of Commerce, and from 1896 to 1899 he was a member of the Table of Magnates.

DANIEL, GEORGE (1616-57). A Cavalier poet, about whom very little is known. Some of his best verse is represented in *Scattered Fancies*, composed in 1645-46. The beautiful manuscript copy of his poems was printed (in a limited edition) by Grosart (4 vols., Blackburn, Lancashire, 1878).

DANIEL, HERMANN ADALBERT (1812-71). A German geographer and theologian. He was born at Cöthen, studied theology at Halle in 1830-34, and was from 1834 to 1870 instructor and professor at the Pädagogium there. He was one of the most eminent followers of the geographer Ritter, and by the attractive style of his various geographical writings greatly contributed towards arousing an increased interest in the study of geography in the schools and among the educated generally. Of these works the following deserve especial mention: *Lehrbuch der Geographie für höhere Unterrichtsanstalten* (76th ed., 1895), *Leitfaden für den Unterricht in der Geographie* (201st ed., 1896), *Handbuch der Geographie* (6th ed., 4 vols., 1894-95), all of which were translated into several European languages.

DANIEL, JOHN MONCREU (1825-65). An American editor, born in Stafford Co., Va. He was privately educated, studied law, and in 1845 became librarian of a small public library in Richmond. In 1847 he joined the staff of the *Richmond Examiner*, the organ of the radical wing of the Democratic party, and as the result of expressions contained therein was compelled to fight several duels. He was a friend of Theodore Parker, whose famous sermon on Webster he published in the *Examiner*, and of

Poe, a sketch of whom he wrote for the *Southern Literary Messenger*. In 1853 he was appointed Minister to the court of Victor Emmanuel. By demanding for some Italians naturalized in the United States and visiting Sardinia rights equal to those of other Americans, he nearly brought about a rupture in the diplomatic relations of Italy and the United States, and afterward, by a breach of social etiquette at Turin, he greatly lessened his influence at the Italian court. Upon the outbreak of the Civil War he was appointed to the staff of Gen. A. P. Hill. His arm having been shattered, he resumed the *Examiner*; and for attacks upon Jefferson Davis and Elmore, the Treasurer of the Confederacy, was challenged by the latter to a duel, in which he was wounded. Consult his *Writings*, with a memoir by his brother (New York, 1868); also George W. Bagby's *John M. Daniel's Latch Key* (Lynchburg, Va., 1868).

DANIEL, JOHN WARWICK (1842-1910). A United States senator, born in Lynchburg, Va. After the Civil War, in which he fought on the Confederate side and became major and chief of staff to Gen. Jubal A. Early, he studied law and became active in politics. He was a member of the Virginia House of Delegates in 1869-72, and of the State Senate in 1875-81. In 1884 he was elected to the Lower House of Congress, as a Democrat, and thereafter was sent to the Senate for the successive terms from 1887 to 1911. His writings include: *The Character of Stonecall Jackson* (1868); *Attachments under the Code of Virginia* (1869); *Negotiable Instruments* (1876; 5th ed., 1903). A collection of his *Speeches and Orations* was published in 1911.

DANIEL, SAMUEL (1562-1619). An English poet, born near Taunton, Somersetshire. He entered Magdalen Hall, Oxford, in 1579, but left without a degree and visited Italy. In 1590 he became tutor to William Herbert at Wilton and wrote masques for the court of James I. Later he retired to a farm near Beckington, in Wiltshire, where he died in October, 1619. Daniel's principal works are a series of sonnets to Delia (1592), unsurpassed in their time by any except Shakespeare's; the beautiful *Complaynt of Rosamond* (1592); a long historical poem in eight books, entitled *The Ciuill Warres between the Houses of York and Lancaster* (1595-1609); two tragedies in the style of Seneca; and a prose history of England. Daniel's verse has been praised for its grace and purity by a long succession of critics. His works were collected in 1823. Consult *Complete Works*, ed. by Grosart (5 vols., London, 1883-96).

DANIEL DERON'DA. A novel by George Eliot published serially in 1876 and in book form in 1877. It is a study of race feeling and tradition, the title character being a Jew.

DANIELL, JOHN FREDERICK (1790-1845). An English physicist, born in London. He was elected a fellow of the Royal Society in 1814, and in 1816, in connection with Professor Brande, established the *Quarterly Journal of Science and Art*. From this period he devoted almost all of his time to the subjects of chemistry and meteorology. In 1824 the Horticultural Society awarded him their silver medal for his *Essay on Artificial Climate*. He was appointed professor of chemistry in King's College, London, in 1831, and in 1839 published his *Introduction to Chemical Philosophy*. He is the only person who ever obtained all of the three

medals in the gift of the Royal Society. His *Meteorological Essays* (1823; 3d ed., 1845) contain the first scientific account of the known phenomena of the atmosphere. He made the first precise determinations of atmospheric moisture by the use of the hygrometer of his invention and invented the *Daniell cell*, an electric battery furnishing a tolerably constant current. (See **VOLTAIC CELL**.) Besides the works mentioned he wrote a large number of papers for the Royal Society.

DANIELL, MOSES GRANT (1836-1909). An American educator. He was born in Boston, Mass., graduated at Harvard in 1863, and for 32 years was prominent in secondary-school work, being master of the Everett School in Dorchester for three years and of the Roxbury Latin School for 17 years, and then principal of the Chauncy Hall School in Boston for 12 years. He was later connected with the editorial department of Ginn & Co., an educational publishing house of Boston. He was prominent in Boston musical circles, being long treasurer of the Boston Handel and Haydn Society. His textbooks for the early study of Latin—some written with William C. Collar—are widely used in American secondary schools.

DANIELL, THOMAS (1749-1840). An English painter and etcher, born at Kingston-on-Thames. He was a pupil of the Royal Academy and was elected an R.A. in 1799. Accompanied by his nephew William, he went to India in 1784 and remained in the East 10 years. The fruit of these travels was the remarkable collection "Oriental Scenery" (1808, 144 aquatints). Besides these he published "Antiquities of India" (24 plates, 1800); "Hindu Excavations at El-lora" (24 plates, 1804); and *Picturesque Voyage to China by Way of India* (London, 1810, 50 plates). Many of his drawings and water colors are in the British and South Kensington museums.

DANIELS, FRED HARRIS (1853-1913). An American mechanical engineer, born at Hanover Centre, N. H. He was educated at the Worcester Polytechnic Institute and later made a special study of iron and steel manufactures in Europe. He entered the employ of the Washburn & Moen Co. in 1873 and was for a time general superintendent and chief engineer. In 1899, when the firm's business was acquired by the American Steel & Wire Co., he was retained as chief engineer, and in 1902 he also became a director. When, in turn, the United States Steel Corporation obtained control of the American Steel & Wire Co. (1901), Daniels was chosen chairman of their board of engineers. More than 150 patents, principally relating to the manufacture of wire rods, represent his contribution to the iron and steel industry.

DANIELS, JOSEPHUS (1862-). An American newspaper man and public official, born in Washington, N. C. He was educated at Wilson Collegiate Institute and in 1880 became editor of the *Advance* of Wilson, N. C. He studied law and was admitted to the bar in 1885, but did not practice, instead taking the editorship of the *State Chronicle* of Raleigh, N. C., which he merged in 1894 in the *News and Observer*, with a weekly edition called the *North Carolinian*. He was State printer in 1887-93 and chief clerk of the Federal Department of the Interior in 1893-95. Long prominent in State and national politics as a Bryan Democrat, in 1912 he had charge of the publicity department

in Woodrow Wilson's preconvention campaign, and in the actual campaign was not merely a member of the national committee (which he had been on since 1896) but of the special directing committee. In President Wilson's cabinet he received the post of Secretary of the Navy, an office in which he did much for the general efficiency of the service and particularly for the enlisted men.

DANIELS, WINTHROP MORE (1867-). An American political economist, born at Dayton, Ohio. He graduated in 1888 at Princeton University, studied at Leipzig, and in 1892 was appointed professor of political economy at Princeton. In 1911 he became a member of the Board of Public Utility Commissioners of New Jersey for the term ending 1917 and in 1914 he was appointed a member of the Interstate Commerce Commission. His publications include: *Revision and Continuation of Alexander Johnston's History of the United States* (1897); *Elements of Public Finance* (1899); *Continuation of Alexander Johnson's History of American Politics* (1902).

DANIELSON. A borough in Windham Co., Conn., 25 miles north by east of Norwich, on the New York, New Haven, and Hartford Railroad, and on the Quinebaug River (Map: Connecticut, H 2). The chief industry is the manufacture of cotton. Pop. 1900, 2823. 1910, 2934.

DANILO, dan't-ló, I., or **DANILO PETROVITCH NIEGOSH** (1826-60). A prince of Montenegro. He was educated at Vienna and succeeded his uncle, Peter II, in 1851, dispensing, however, with the customary title of prince bishop. In 1852 he became involved in a war with Turkey, the Porte claiming jurisdiction in Montenegro, and the boundaries between the two countries were not defined until 1858. Danilo devoted himself steadfastly to the achievement of Montenegrin independence and the furtherance of civilization throughout the land. He introduced financial reforms, organized a military service, and issued a legal code. He was assassinated by a personal enemy, Aug. 12, 1860. His nephew, Prince Nicholas, succeeded him.

DANISH LANGUAGE AND LITERATURE.—Language. The history of the Danish language begins properly about the year 1000 A.D., when the different Scandinavian dialects, which until that time had formed one speech, developed into separate languages. (For an account of the earliest Scandinavian monuments, see **RUNES**.) The Danish and Swedish formed together the East Northern group, the Icelandic and Norwegian, with the Faroese, the West Northern. The oldest specifically Danish records are runic inscriptions and a few names in Latin manuscripts. About 1300 appeared several collections of laws which show the existence of at least three distinct dialects, there being at that time no standard form for literary use. The leveling of inflections, which is as marked a feature of Danish as of English, had already begun, although many forms were still retained. The vocabulary is still in the main Northern, with very few foreign elements. Between 1350 and 1500 the loss of inflections and of other grammatical distinctions increases rapidly, and the language approaches more and more its present form. A striking feature of the vocabulary is the introduction of foreign words, especially those from the French, Latin, and Low German. High German words being sparingly borrowed. The syntax, too, is affected

by Latinisms in consequence of the wide use of Latin by Danes. As a result of the publication of the first modern Danish translation of the Bible, that of Christian III (1550), the vocabulary became fairly fixed, receiving practically its present character. The relation of the Danish Bible to the Danish language is very similar to that of the English Bible to the English language. After 1537 Danish became the official language of Norway, the Norwegian language remaining as a collection of dialects spoken chiefly in the country districts. (For the relation of these dialects to Danish, see NORWEGIAN LANGUAGE.) In the following century, on the other hand, Denmark suffered a loss by the cession to Sweden of the Province of Skåne, or Schonen, and within a generation the Swedish took the place of the original Danish.

The principal grammatical changes between the Reformation and 1700 are the partial substitution of the natural for the grammatical gender and the simplification of the inflections. The vocabulary shows a generous borrowing of French and German words. The different dialects are still used for literary expression, and it was not until Holberg (1684-1754) that a standard literary Danish may be said to have existed. During the last half of the eighteenth century German and Danish were used side by side in Denmark, very much as Latin and Danish had been used earlier, and so great was the German influence that the Danish State Calendar was published in that language until the first year of the nineteenth century. During the last 30 years, mainly as a result of the war with Germany, the vocabulary has become more and more pure. Whole classes of German words have been replaced by Danish equivalents, and no new German words have been borrowed.

Danish differs in general from its nearest Scandinavian neighbor, Swedish, by a greater leveling of inflections and by less archaic sounds. The most striking single feature of the spoken language is the glottal "catch," called in Danish *Stød* (literally, a push or thrust). It occurs after certain consonant sounds and consists of a momentary closure of the glottis. It has been compared in its effect upon foreigners to a hiccup. The glottal catch is not found in Dano-Norwegian, and it is lacking in some of the dialects in Denmark, while Jutish occasionally employs the catch where it is not found in the Zealand dialect. The cultivated standard speech is characterized by a marked tendency to slurring, the enunciation being much less distinct than that of Swedish or of the Danish spoken in Norway. There is also much less vocal inflection. In Danish, as in German, the pronunciation of the stage is very different from that of social intercourse.

The principal Danish dialects are the Zealand, including the slightly differing uses of the neighboring smaller islands, and with a distinct type for Copenhagen, the Jutish, including the speech of Schleswig, and the Bornholmsk, which latter is the sole remnant of the East Danish dialects. The Dano-Norwegian will be considered in connection with the Norwegian (q.v.). Mention should be made of the Danish spoken in the United States, which really constitutes a modern dialect. It differs from the home tongue in pronunciation, apparently as a result mainly of English influence, and in vocabulary. Danish-American newspapers contain many English

words not recognized in Denmark, and the speech of our Danish citizens is even more mixed, the English influence extending to the syntax as well as to the vocabulary. As the subject has never been scientifically investigated, it is impossible to determine how far the original dialectic peculiarities are preserved.

Danish orthography is in an even more unsettled state than the English. There are several distinct systems of spelling in use in Denmark, and at least two others in Norway. The official system is employed in all school books and government publications, but is generally disregarded by writers, whose system in turn is scorned by philologists. As in German, both the so-called Gothic and Roman type are in use, and substantives are sometimes uniformly spelled with initial capitals, sometimes not. There is, however, a decided tendency in recent times towards simplification of spelling, and in time uniformity will probably be reached.

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Literature. The first Danish book is a treatise on medicine by Henrik Harpenstreng, who died in 1244. The first Danish law dates from 1386, but the first distinctly literary writings in the language are the chivalric ballads, *Kjæmpeviser*, which must have been composed from 1300 to 1500, though they survive only in sixteenth-century form, best edited by Gruntvig (8 vols., unfinished; continued by H. Olrik, Copenhagen, 1895) and by Abrahamson, Nyerup, and Rahbek (5 vols., 1812-14). Of these there are some 500, partly historical, partly mythical, but wholly popular in origin. The first Danish book was printed in 1495, and sequential literary history begins with Christian Pedersen, who translated the Bible (1550) and gave to his people the legends of Charlemagne and Ogier in their final form. Vedel (1542-1616) stimulated national literature by publishing 100 of the *Kjæmpeviser* (1591) and translating Saxo Grammaticus (1575). *Reynard the Fox* had been translated into Danish in 1555. Hvitfeldt gave Denmark its first history (1595) and

Rauch its first drama (about 1600). Clausen's translation of the Icelandic *Heimskringla* appeared in 1633, and Arbebo's (1587-1637) *Heimæroner*, the first Danish epic, in 1641. Hymn writing was soon after inaugurated by Kingo (1634-1703) and Brorson (1694-1764). But these beginnings were all overshadowed by the genius of Holberg (q.v.), the first Dane whose work is still an actuality in Danish culture. All branches of learning and art felt his stimulating influence, the University was reopened (1742), the Society of Sciences founded, and the Society for the Improvement of the Danish Language. Then Klopstock, who had settled at Copenhagen, though his direct influence was bad, fostered the founding of the Society of the Fine Arts, and Frederick V patronized all.

Under these influences, or the spirit that prepared for them, many poets were born (1742-49)—Johannes Ewald, Wessel, Brun, Frimann, Fasting, Pram, Storm—who brought about a lyric and dramatic revival in the last quarter of the century. The first, Ewald (q.v.), aided the revival of interest in Scandinavian mythology; Wessel helped to emancipate the Danish stage from French bondage; the others, Norwegians by birth, gave the language a richer imagery. The only prose writer of importance till near the close of the eighteenth century was the philosopher Treschow (1751-1833); and poetry, after the passing of the group just named, sank into a mechanical insignificance, from which Baggesen (q.v.) and romanticism revived it.

The literary births from 1758 to 1777 are mainly of prose writers—Rahbek (1760-1830), a good novelist, catholic-spirited critic, and editor of older poets, Heiberg the elder (1758-1841), a political and æsthetic critic, Malte-Brun (1775-1826) and Olufsen (1764-1827), geographers, Nyerup (1759-1829), a diligent literary compiler; Engelstoft (1774-1850), an historian; Mynster (1775-1854), a theologian; and the great and genial scientist Oersted (1777-1851), are the most prominent names for two decades, where the only poet of distinction is Baggesen (1764-1826), an erratic exception to prove the rule that an "age of enlightenment is not an age of song."

The romantic movement in Denmark centres around Oehlenschläger (q.v.) and dates from 1802. His more important assistants in fostering national individualism in literature were Blicher (q.v.), novelist and poet, Grundvig, scholar, antiquarian, poet, politician, Ingemann (q.v.), the historical novelist; Hauch (q.v.), a dramatist and novelist; Countess Gyldenbourg-Ehrensward (q.v.), the greatest woman writer of Denmark, and mother of J. L. Heiberg (q.v.), critic, poet, dramatist, and, on the whole, the most important figure of the generation. These writers were born between 1779 and 1791. To the second generation of the Romantics, born between 1798 and 1809, belong Hertz (q.v.), the poet; Andersen, of the world-famed *Fairy Tales*; Bagger (1807-46), who died, like Keats, with unmatched promise unfulfilled, and Paludan-Müller (1809-76), a dramatic and epic philosophic poet of much power.

Aside from poetry the romantic period was not fruitful. One may note the antiquarians Rask (1787-1832), Rafn (1795-1864, q.v.), and Petersen (1791-1862); the lexicographer Molbech (1783-1857); the botanist Schouw (1789-1852); and the philosopher Sibbern (1785-1872), succeeded by the brilliantly subtle

Kierkegaard (1813-55). The period counts no significant novelist or dramatist who was not primarily a poet, though writing perhaps like Andersen in prose.

The 30 odd years that separate the birth of Paludan-Müller from that of Georg Brandes (q.v.) are singularly unproductive of Danish literary genius. The most prominent names are those of the poet Ploug (1813-94), the novelist Goldschmidt (1819-87), and Herman Ewald (1821-1908). Politics absorbed popular interest after 1848. Romanticism seemed bankrupt, but the Danes were slow in attuning themselves to the modern spirit of realism. That they have done so at all, through political distractions, national humiliation and dismemberment, is largely the work of Brandes, supplemented by the example of Björnson and Ibsen. Of the new school the most distinguished are Drachmann (q.v.), Richardt (q.v.), and Christiansen (q.v.). One may record also the names of Bergsøe (1835-1911, q.v.), Jacobsen (1847-85), Skram (1847-1905); Edward Brandes (1847-), Bang (1858-1912), Gjellerup (1857-), Pontoppidan (1857-), Karl Larsen (1860-), and Esmann (1860-1904); but on the whole there seems little promise in this generation.

Aside from literature proper, Denmark has seen, in the nineteenth century, a host of thinkers and scholars. To name a few of them: the philosopher Hoffding (1843-); the theologian Martensen (1808-84); the philologists Madvig (1804-86), V. Thomsen (1842-), Westergaard (1815-78), Fausbøll (1821-1909), Nyrop (1858-), Jespersen (1860-), Holger Petersen (1867-); archaeologists like Sophus Müller (1846-). There is also an important group of historians, such as N. M. Petersen (1791-1862), K. F. Allen (1811-71), Edward Holm (1833-), A. D. Jørgensen (1840-97), Troels Lund (1840-), J. Steenstrup (1844-), Schjerni (1846-82), Erslev (1852-). Among the writers on æsthetics we may mention Hyen (1798-1870), J. Lange (1833-96), and C. Lange (1834-1900). In the realm of the exact sciences, too, a number of Danes achieved noted distinction; to enumerate them here is, however, out of place as with the nineteenth century science and literature have entirely different goals and methods.

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DANISH POLITICAL PARTIES. See POLITICAL PARTIES, Denmark.

DANISH WEST INDIES. See WEST INDIES, DANISH.

DANITES, or DESTROYING ANGELS. In American history, a name given to members of a secret society connected either officially or unofficially with the Mormon church, which was organized about 1837 for the purpose, as alleged, of "dealing as avengers of blood with Gentiles." Many crimes were attributed to the society. The Mormons themselves either disavow any connection with it or flatly deny its existence. Other names by which the society was known are Daughters of Zion, Big Fan, Daughters of Gideon, and Flying Angels. The term "Danites," or "Sons of Dan," is said to have owed its origin to Gen. xlix. 17. During the political campaign of 1858 in Illinois, which has become famous because of the contest between Lincoln and Douglas for the United States senatorship, the term "Danites" was applied as a nickname to the anti-Douglas Democrats. Consult Ferris, *Utah and the Mormons* (New York, 1854), and Whitney, *History of Utah* (3 vols., Salt Lake City, 1892-98).

DANJURO, dān'jō'rō', ICHIKAWA (1837-c.1910). A Japanese actor, born in Tokyo and educated in the Chinese classics and in Japanese literature, history, and painting of the Tosa school. He was the ninth of his name, the first Danjuro having been a dramatic actor near the close of the seventeenth century. He was a member of his father's company when only six years old, and later he succeeded his brother, the eighth Danjuro, at his death as the bearer of the family name. To the repertory of the famous 18 pieces inherited by each generation of his family he added 18 new pieces, including the *Kasugatsubone*.

DAN'NAT, WILLIAM T. (1853-). An American painter, born in New York City. He studied in Munich and under Carolus-Duran and Munkacsy in Paris, where, after a journey in Spain, he afterward took up his residence and became a teacher at the Ecole des Beaux-Arts. Munkacsy's influence is strong in his early works, of which "The Quartette" (1884), now in the Metropolitan Museum, New York City, is a fine example. It shows the technical ability, the daring style, the solid, broad painting, and absence of conventionality characteristic of all his work. Towards the end of the eighties he abruptly changed his method and under the influence of Japanese art began to occupy himself with color problems. Among the many

Spanish subjects done at this time are a "Sacrifice in Arragon" (1888), in the Chicago Art Museum, and "A Café Chantant" (Munich, 1892), which was the sensation of the exhibition. For sheer bravura, this startling, masterly study of artificial light has been equaled by no other American artist and by few foreigners. His "Lady in Red," a one-color scheme, is in the Luxembourg. The difficulties presented by such a subject as this one are managed with consummate ease. Something in the same manner is his "Lady in White." Among the portraits that have made him at once criticized and praised are that of "Madame E." (1895), the three-quarter length of a woman almost colorless except for the vivid red of her lips, and that of the dancer Otéro (1895). Since that time Dannat has exhibited very little and predominantly portraits. He was president of the Society of American Artists, a member of the Société Nationale des Beaux-Arts and of the International Art Jury in 1889, in which year he received the cross of the Legion of Honor. Consult Isham, *History of American Painting* (New York, 1905), and Dayot, in *Art et Décoration*, vol. i (Paris, 1904).

DANNECKER, dān'nēk-ēr, JOHANN HEINRICH VON (1758-1841). A German sculptor, born in Stuttgart, Oct. 15, 1758. His father, a groom of the Duke of Württemberg, first wished him to be a ballet dancer, but through the favor of the Duke the lad was educated in the Karlschule at Ludwigsburg, where he formed his lifelong friendship with Schiller. He afterward studied drawing and sculpture under Le Jeune, Guibal, and others, and in 1777 he obtained the prize for the best model of "Milo of Croton Destroyed by the Lions." In 1783 he studied in Paris under Pajou and soon afterward went to Rome, where he remained until 1790. At Rome he met Goethe, Herder, and Canova. The latter befriended him and gave him instruction in sculpture. Here he executed his first marble statues, of "Ceres" and "Bacchus." On his return to Germany he was appointed professor of sculpture in the Military Academy of Stuttgart and remained in that city until his death, Dec. 8, 1841. Dannecker was one of the greatest sculptors of the classic school. His art is midway between that of Canova and Thorvaldsen and shows a continual struggle between the classic style and the naturalistic. His chief forte lies in expressing individual characteristics. This gives great value to his busts, among the best of which are those of Schiller at Weimar, of Lavater in the Public Library of Zurich, and of the kings Frederick and William of Württemberg. His earlier works are chiefly pagan in subjects, while his later ones are Christian and are pervaded by a sensitive idealism. Among the former are his "Sappho" (Stuttgart Museum), "Psyche," and his best-known work, the "Ariadne," in Frankfurt—a figure larger than life, reclining on the back of a panther. His most ambitious work, however, is his colossal "Christ." The original is in Tzarskoye-Selo, but the sculptor executed a replica, which is now at Regensburg. Consult Grüneisen and Wagner, *Dannecker's Werke in einer Auswahl* (Hamburg, 1841), and Spemann, *Dannecker* (Stuttgart, 1909).

DANNEMORA PRISON. See CLINTON STATE PRISON.

DANNENBERG, dān'nēn-bērk, HERMANN (1824-1905). A German numismatist, born in

Berlin. He became president of the Numismatic Society in that city and is an authority on mediæval coins, on which subject he published the standard work entitled *Die deutschen Münzen der sächsischen und fränkischen Kaiserzeit* (3 vols., 1876-98). He wrote also *Grundzüge der Münzkunde* (2d ed., 1899) and *Münzgeschichte Pommerns im Mittelalter* (1893; 2d ed., 1896).

DANNEVIRKE, dän'ne-vēr'ke, or **DANNEWERK** (Dan., Danes' work). A wall or intrenchment, built by the Danes about the end of the eighth century and strengthened by Harold Bluetooth in the tenth century. The Dannevirke extended from the Schlei to the Treene, a distance of over 10 miles, and protected the Danes from the incursions of the Saxons and Wends. In 974 Otho II attacked the Dannevirke and finally burned and destroyed a part of it. Waldemar the Great rebuilt a section with brick and stone about 1180. During the Schleswig-Holstein wars the Dannevirke fell into the hands of the Prussians. April 23, 1848, and, when attacked by the Austrians and Prussians in 1864, was abandoned by the Danes. It has since been leveled. Consult Philippsen and Sinksen, *Führer durch das Danneværk* (Hamburg, 1903).

DANNREUTHER, dän'roi-tēr, EDWARD GEORGE (1844-1905). An English pianist and writer on music. He was born at Strassburg, Nov. 4, 1844, but grew up in Cincinnati, where F. L. Ritter was his first teacher. In 1859-63 he studied at the Conservatory of Leipzig. The success of his first public appearance as a pianist in London in 1863, when he played Chopin's concerto in F minor for the first time in England, was such that it determined him to settle permanently in London. He soon rose to great prominence as a teacher, writer, and lecturer, and became one of the most zealous champions of Wagner and musical progress. In 1872 he founded the London Wagner Society, directing its concerts for the first two seasons, and was chiefly instrumental in arranging the great Wagner festival of 1877, when the master was his guest during his stay in England. He translated several of Wagner's prose works into English, wrote for several musical journals, and was an important contributor to Grove's Dictionary. His very valuable articles on Wagner, published originally in the *Monthly Record* in 1872, were reprinted separately in 1904 in book form as *Richard Wagner and the Reform of the Opera*. His book on *Musical Ornamentation* (2 vols., London, 1893-95) is a standard work. For the *Oxford History of Music* he wrote the sixth volume, "The Romantic Period" (London, 1905). In 1895 he was appointed professor of pianoforte at the Royal College of Music. He also holds the distinction of having first introduced into England the piano concertos of Grieg (A minor), Liszt (A), and Tchaikowski (B flat minor).

DAN RIVER. A river rising in the Blue Ridge Mountains (q.v.), in Patrick Co., Va., and flowing southeast into North Carolina. After crossing and recrossing the boundary between these States four times, it combines with the Staunton River in southern Virginia to form the Roanoke River (q.v.) (Map: North Carolina, C 1). It is 186 miles long, draining an area of 3700 square miles. Between 1881 and 1888 the United States government expended about \$50,000 in making the channel navigable

for bateaux and boats of light draft, as far as Madison, in Rockingham County. The river furnishes extensive water power at several points.

DANSVILLE. A village in Livingston Co., N. Y., 76 miles east-southeast of Buffalo, on the Delaware, Lackawanna, and Western and the Dansville and Mount Morris railroads (Map: New York, C 6). The Jackson Health Resort, three parks, the high-school building, and the village library are noteworthy features. Shoes, machinery, and paper are manufactured, and there are important nursery interests. The water works are owned by the municipality. Dansville was settled in 1795 and was incorporated as a village in 1845. It is governed by a mayor and a council. Pop., 1900, 3633; 1910, 3938.

DANTAN, dān'tān'. A family of French artists.—ANTOINE LAURENT (1798-1878), called the elder, was born at Saint-Cloud. He was a pupil of his father, a wood carver, and of Bosio and Brion. Having won the Roman prize in 1828, he continued his studies in Rome and after his return acquired reputation by important public monuments, like the statues of Admiral Duquesne at Dieppe, François Malherbe at Caen, and "The Archangel Raphael" in the Madeleine, Paris, and by his eminently characteristic portrait busts of celebrated contemporaries, such as Beethoven, Rossini, and the actress Rachel (Théâtre Français), the Marshal de Villars and Duc de Berwick (Versailles). Among his ideal works are "Young Bather Playing with his Dog" (1835) and "Neapolitan Tambourine Girl." His work is characterized by purity of line.—JEAN PIERRE (1800-69), his younger brother, also a sculptor, was born in Paris, studied under Bosio, and confined himself almost exclusively to portrait busts and statues. His works include such celebrities as Cherubini (Palais de l'Institut), Rossini (Opera House, Paris), Baron de Rothschild, Victor Hugo, Meyerbeer, Beethoven, Verdi, and Rosa Bonheur. He is especially known for clever caricature busts and statuettes in terra cotta of all the notabilities of the time, a large collection of which is in the Musée Carnavalet, Paris. He may be said to have created modern caricature in sculpture.—His son JOSEPH EDOUARD (1848-97), a painter, was born in Paris and studied under Pils and Henri Leberman at the Ecole des Beaux-Arts. He painted portraits, religious, mythological, and genre scenes, among the best of which are "Studio Interior" (Luxembourg) and "Entracte during a First Night" (Théâtre Français). His drawing is correct, his execution smooth, his color pleasing.

DANTAS, JULIO (1876-). A Portuguese dramatist. He practiced medicine in Lisbon, was director of the Conservatório, and there produced revivals of classic Portuguese comedies, notably Camoens, but he was best known for his own dramas. These include: *O que morreu d'amor* (1899), *O viriato tragico* (1900), *A severa* and *Os crucificados*, these two being especially popular in Portugal and Brazil, and *A ceia dos cardeais*, which was played in Germany in a version by Louise Ey as *Das Nachtmal der Kardinale* (1905). In 1912 *Roses all the Year Round*, a version of a one-act play by Dantas, was given successfully in London.

DANTE ALIGHIERI, Ital. pron. dān'ta a'lē-gyā'rē (1266-1321). An Italian poet, au-



DANTE
FROM A PORTRAIT BY GIOTTO, IN THE NATIONAL GALLERY, FLORENCE



DANTE
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obstructive to the other and both acting as agents of God's will and goodness. This limitation of the Pope's prerogatives led to the condemnation of this work.

But no one of these productions adequately foreshadows the greatness of that miracle of human achievement we have in the *Comedy*, which later critics called *Divine*. Here we have a complete mastery of life by Dante's intelligence. The universe spreads out before him—material, intellectual, spiritual. His mind grapples with its manifold problems—scientific, philosophical, ethical—and does not rest till it has found an answer. Dante's fundamental preoccupation is the moral one: he studies how man, endowed with various faculties, intelligence, and soul, may utilize the materials of knowledge and experience the world affords to attain the vision of reality, of God. What he strives for preeminently is a conscious rise to salvation. Keenly aware of the limits of human intellect, he is equally alive to the danger of unguided faith. He seeks, then, so to employ the intelligence that the soul may be brought to an attitude of receptivity towards divine revelation, that alone imparts ultimate truth. Love, which originally came to him as simple experience of sex psychology and which he universalized in the *Vita nuova*, is the guiding principle of this evolution. It is the impulse that creates a desire for truth, it is the touchstone for measuring the attainment of it. In the *Comedy* Vergil symbolizes human reason or intellect; Beatrice, divine revelation. Vergil can interpret human experience of sin and virtue, while the mysteries of beatitude, of the divine vision, can be unfolded only by the higher power. We find in the *Inferno* three categories of sin—incontinence (lust, gluttony, avarice, prodigality, anger), violence (heresy, homicide, suicide, squandering, blasphemy, sodomy, usury); fraud (pandering, seduction, flattery, simony, soothsaying, swindling, hypocrisy, thieving, evil counsel, creation of schism, alchemy, impersonation, counterfeiting, falsehood, treason). In this order sins descend through the abyss of Hell, covered at the top by the continent of the Northern Hemisphere, and descending cone-shaped to the central point of the earth. Dante's geography held that the Southern Hemisphere was covered by the vast ocean, out of which rose the mount of Purgatory. At its base are the negligent (excommunicated, procrastinators, victims of sudden death, those distracted from repentance by public affairs), whose indolence prevents them from beginning at once the cleansing ascent. Above, on seven ascending terraces, are those to be purged of pride, envy, wrath, sloth, avarice, prodigality, gluttony, and lust. The torments of Hell symbolize the consequences of sin; in Purgatory the sinners are forced to act the opposite of their shortcomings, sustained by examples of the opposite virtues. At the summit of the mount of Purgatory is the Earthly Paradise—all that man can attain through reason and human virtue unilluminated by grace. Thence we ascend to Paradise. Dante's heaven is that of the Ptolemaic system: around the earth's globe are nine concentric spheres, one for each of the seven planets, one for the fixed stars, beyond which come the Crystalline Heaven (*primum mobile*) and finally the empyrean where is God. With God dwell the souls of all the blessed; but

they cast projections back upon the spheres according to the intensity of their love, which determines the degree of their beatitude: in the sphere of the Moon, ruled by the angels, are the inconstant, of incipient charity; in Mercury, ruled by the archangels, are the ambitious of *proficient* charity of *deed*; Venus, ruled by the Principalities, reflects the sensuous, of *proficient* charity of *will*; the Sun, ruled by the Powers, teachers, of *proficient* charity of *intellect*; Mars, ruled by the Virtues, militant Christians, of *perfect* charity of *deed*; Jupiter, ruled by the Dominations, just rulers, of *perfect* charity of *will*; Saturn, ruled by the Thrones, contemplative spirits, of *perfect* charity of *intellect*. In the sphere of the Fixed Stars appear the apostles, of *divine* wisdom, ruled by the Cherubim, in the Crystalline Heaven appear only the Seraphim reflecting *divine* love.

Dante's moral system was derived largely from St. Thomas; and he owed much to St. Augustine and the Neoplatonics. But his own mastery of the science and speculation of his time was such that his contemporaries and immediate followers regarded the *Comedy* as a book of *divine* wisdom. They studied it and commented upon it as such. But few works in all literature have so deeply entered into the consciousness of mankind. It is true that, owing to its peculiar view of life, the *Comedy* was for a time, even in Italy, dimmed, as a work of art, by such productions as those of Petrarch and Boccaccio. Since the end of the eighteenth century, however, its preeminence has been undisputed. For, even if philosophy and science have profoundly changed since Dante's time, the *Comedy* created figures that are immortal possessions of humanity, and it exhaustively portrayed states of mind that are common to all ages and races of men. In Dante's Francesca da Rimini all that the world has felt concerning love and death is objectified, brought near to every reader, just as in his Ugolino we have an unsurpassable expression of pathos and outraged sense of justice. The insignificance of man in the presence of the immensity of the universe was never more impressively described than in his Ulysses. In every picture of the *Inferno* there is the pictorial vividness of a Giotto, while in the *Purgatorio* we find the manifold emotions of hope and confidence, as in the *Paradiso* the highest imaginings of ecstatic vision.

Dante literature itself is one of the great phenomena of modern culture. We can outline only a few instruments that an English-speaking reader would find indispensable or useful at the beginning of Dante study: 1. **BIBLIOGRAPHY:** fundamental is Koch's *Dante Catalogue* (Ithaca, 1900); for current bibliography since that time, consult the files of the *Giornale Dantesco* (Florence) and of the *Giornale Storico della Letteratura Italiana* (Torino). 2. **EDITIONS AND TRANSLATIONS** of the works: Moore, *Tutte le opere di D. A.* (Oxford). Of the *Comedy*: annotated ed. of Grandgent (Boston, 1913); trans. by Longfellow (ib., 1887); by Norton (ib., 1893); with text opposite by Okey ("Temple Classics"). Of *Vita nuova*: ed. by Scherillo (Milano, 1911); trans. by Norton (Boston, 1893); by Rossetti (Portland, Me., 1898). Translation of *Convito* (London 1908). Of *De Monarchia* by Church (ib., 1879). Crit. ed. of *De Vulgari Eloquentia*: by Rajs

(Florence, 1896); trans. by Howell (London, 1890). *Trans. of Letters* by Latham-Carpenter (Boston, 1891). Of *Quæstio de aqua et terra* (doubtful authenticity) by Bromby (London, 1897). Of *Canzoniere*, with text opposite, by Wicksteed ("Temple Classics"). 3. CRITICAL WORKS, BIOGRAPHY, ETC.: Early biographies of Dante collected by Zanichelli (Bologna, n. d.); trans. in *Yale Studies* (New York, 1901); Moore, *Dante Studies* (Oxford, 1898); Wicksteed, *Dante and Aquinas* (London, 1913); Reade, *The Moral System of Dante's Inferno* (ib., 1909); D'Ovidio, *Il purgatorio e il suo preludio* (Turin, 1906); Busnelli, *Il concetto e l'ordine del Paradiso dantesco* (Florence, 1911-12); K. Vossler, *Die göttliche Komödie* (Leipzig, 1907-10); Flamini, *Introduction to the Study of Dante* (trans. Josslyn, Boston, 1912); Toynbee, *Dante Dictionary* (London, 1900); Scartazzini, *Enciclopedia dantesca* (Milan, 1896-99); Sheldon-White, *Concordanza delle opere di D. A.* (Oxford, 1905); Rand-Wilkins, *D. A. Operum Latinorum Concordantæ* (ib., 1912). Farinelli, *Dante e la Francia* (Turin, 1908); Toynbee, *Dante in English Literature* (New York, 1909); Sanvieschi, *I primi influssi di Dante del Petrarca e del Boccaccio sulla letteratura spagnuola* (Milan, 1902); De Sanctis, *Storia della letteratura italiana*, vol. 1 (Bari, 1913), and *Nuovi saggi critici* (Naples, 1898). Fletcher, *Dante Alighieri* ("Home Library", New York, 1914); Santayana, *Three Philosophical Poets* (Boston, 1912).

DANTÈS, dān'tās', EDMOND. The Count in Dumas's romance *The Count of Monte Cristo*.

DANTON, dān'ton', GEORGES JACQUES (1759-94). A great popular leader in the French Revolution. He was born, Oct. 28, 1759, at Arcis-sur-Aube, of a bourgeois family. Though his parents wished him to become a priest, Danton preferred the law, and, after being educated in his native town and at Troyes, he went to Paris. A born orator, Danton quickly rose in his profession, and as early as 1785 he was known as a successful practitioner before the Parlement of Paris. In 1787 he married, purchased, at a cost of 80,000 livres, a position as advocate of the Royal Council, and was soon earning an income of 25,000 livres a year. At this time he is described as a forcible and eloquent speaker, a man of liberal tastes, fond of books, and happy in his domestic life. He saw the Revolution approaching and as early as 1787 said to his patron, M. de Barentin, "Moderate reforms are no longer possible; do you not see the avalanche soon to descend?" It is said that Mirabeau, perceiving Danton's genius, sought to attach him to himself. In the early revolutionary outbreaks Danton took no prominent part, but early in 1790 he was threatened with arrest for protesting in violent terms against Marat's arrest, and in June of the same year he appears as one of the chief founders of the club of the Cordeliers, or ultra-Jacobins, while in the autumn he was chosen to be commander of the National Guard of his district. The next year he appeared as the advocate of the extremists of Paris and publicly attacked the antirevolutionary leaders. His utterances having exposed him to arrest, he fled to England and remained there some six weeks, during which time he had conferences with the chief leaders of the Whig opposition. On returning to Paris he was elected to office in the commune and probably was largely instrumental in in-

citing and bringing to a successful issue the insurrection of Aug. 9 and 10, 1792. After the taking of the Tuileries and the suspension of the royal power, Danton became Minister of Justice, and in this capacity entered the provisional government and became a member of the executive.

The strongest personality of them all, Danton at once assumed the leadership. He took active measures to free the country of its foreign invaders. His eloquence thrilled the people, and when, on September 2, he made his wonderful speech before the Assembly and cried *Pour les vaincre, pour les atterir, que faut-il? De l'audace, encore de l'audace, et toujours de l'audace* ('To vanquish them, to crush them down, what is necessary? To dare, to dare again, and always to dare'), France responded by placing 14 armies in the field. In October, 1792, partly by force and partly by diplomacy, the foes had been expelled. In the fearful days of the September massacres, when political prisoners were taken out and butchered by hundreds, Danton would not let the government leave Paris. Of the atrocities that took place he was presumably not guilty, but he certainly acquiesced in and condoned the deeds of his associates. In September, 1792, he resigned as Minister of Justice and was elected to the Convention. There he successfully repelled a venomous attack made on him by the Girondists and, later, on his return from his mission to Dumouriez, answered Marat's insinuations that he had been privy to the treachery of that general. Danton was among those who voted for the death of the King (January, 1793). After being elected president of the Jacobin Club Danton, in March, 1793, became a member of the Committee of Public Safety and later its president. This was the period of his greatest services to France, when he organized her defenses and directed her foreign policy. The irreconcilable attitude of the Girondists forced him to take active measures for their suppression (June 2, 1793), for he felt that they were not true revolutionists. In his revolutionary enthusiasm, however, Danton called up a force that was destined to crush him. After the fall of the Girondists he advocated the formation of a new and more powerful Committee of Public Safety, endowed with unlimited authority and ample resources. He himself ceded his right to a seat on this tribunal, an error of judgment which cost him his life. Danton's aim at this time was undoubtedly the conciliation of the various republican and revolutionary factions in France into a stable and peaceful government, the aim of the committee was to make its own power supreme over all others. Robespierre began to emerge as its leader, supported by Saint-Just, Billaud-Varennes, and Couthon. While Danton, with his friend and ally, Camille Desmoulins (q.v.), the inspirer and chief author of the *Vieux Cordeliers* papers, was advocating moderation, the followers of Robespierre were preparing to strike. The first of their opponents to fall were the fanatical Hébertists, in March, 1794; after them came the turn of the Dantonists. Their leader seemed no longer to care for the turmoil of politics, but pursued a policy of inaction and awaited the attack. For a short time Danton retired to his home at Arcis-sur-Aube, having recently married a second wife. His enemies were active, and, after some show of hesitation, Robespierre yielded to Billaud-Varennes (q.v.),

and the fate of the Dantonists was sealed. On March 30, 1794, Danton, Camille Desmoulins, and others of the party were seized and imprisoned.

Before the revolutionary tribunal the strength of Danton's character shone forth. Questioned by the president as to his name and dwelling, he replied: "My name? It is Danton: a name tolerably well known in the Revolution. My dwelling? It will soon be annihilation; but my name will live in the pantheon of history." His trial was a farce, the formal charge being that of conspiring to restore the monarchy. The eloquence of the man was so great that Paris thrilled as he hurled defiance at his accusers, and there was danger of a popular revolt in his favor. The Convention eagerly seized on the infamous suggestion of Saint-Just, that disrespect for justice merited summary conviction, and, with 14 of his supporters, Danton was at once condemned to the guillotine. Almost his last words were inspired by the treachery of Robespierre. "I could have saved him," he said; "I leave it all in a frightful welter: not a man of them has any idea of government. Robespierre will follow me; he is dragged down by me." On April 5, 1794, Danton mounted the scaffold with calm courage. A moment he stood erect, facing the mob, then, turning to the executioner, said, "Show the people my head: it is worth seeing." Danton was extremely large and extremely ugly, his face roughly corrugated by pockmarks, his nose crushed by an early accident, his eyes small and deep-set. He was rough in word and overquick in action, his speeches were always extemporaneous, the hot, passionate declamations of the moment, as, e.g., those on the trial of the King; his acts, such as the law of the 40 sous, equally hot-headed and ill-considered. But the accusations of venality, of dissolute conduct, of bloodthirsty ferociousness, so often made against Danton, have been long since disproved.

Bibliography. Following the lead of Comte, the French Positivists have sought with considerable success to redeem the reputation of Danton and to establish his claim to rank as a patriot. The biographies of him that are of any value represent this tendency. His chief biographer has been Dr. Robinet, whose studies are supported by an ample array of documents and *pièces justificatives*. These are *Danton, mémoire sur la vie privée* (Paris, 1865); *Le procès des Dantonistes—documents avec introduction historique* (ib., 1879); *Danton émigré, recherches sur la diplomatie de la République, 1793* (ib., 1887); and *Danton, homme d'état* (ib., 1889), the most important of the series, published on the revolutionary centenary. All recent writers have relied largely upon the researches of Robinet. Other important works are: Bougeart, *Danton* (ib., 1861); Dubost, *Danton et la politique contemporaine* (ib., 1880), a study of Danton's influence on French republicanism, which the author regards as permanent, and *Danton et les massacres de Septembre* (ib., 1886); Beesly, *Life of Danton* (London, 1889). Belloc, *Danton: A Study* (ib., 1899), is a well-written book by a strong admirer. Danton's works have been collected and edited by Vermorel, *Œuvres de Danton* (Paris, 1886). An admirable selection of significant extracts from his important speeches will be found, preceded by a useful introduction, in H. Morse-Stephens, *Orators of the French Revolution* (Oxford,

1892). Consult also: Aulard, *Notes sur l'éloquence de Danton* (Paris, 1882); *Les orateurs de la législative et de la convention* (ib., 1885-86), and *Les grands Français* (ib., 1887); Warwick, *Danton and the French Revolution*; Gibbs, *Men and Women of the French Revolution* (Philadelphia, 1906).

D'ANTRAIGUES, dān'traig'. See ANTRAIGUES.

DANTZIC, dān'tsik. See DANZIG.

DANUBE (Ger. *Donau*, Hung. *Duna*, Lat. *Danuvius*, OChur Slav. *Dunavŭ*, *Dunay*; connected with OHG. *tuonawoca*, foreign). The second of European rivers, inferior only to the Volga. It has its origin in the Brege and Brigach, two mountain streams rising in the eastern part of the Black Forest, in Baden, at an elevation of 2200 feet above sea level, in lat. 48° 6' N. and in long. 8° 9' E. (Map: Europe, E 4). The total length of the Danube is about 1750 miles. The area which it drains is estimated at about 315,000 square miles, comprising countries differing widely in climate and productions, including southern Germany, a great part of Austria-Hungary, Bosnia, Servia, Bulgaria, and Rumania. The Danube is joined in its course by 60 navigable rivers, whose waters, with those of many lesser streams, it conveys into the Black Sea. From its source it flows in an easterly and then in a northeasterly direction through Baden, Hohenzollern, Württemberg, and Bavaria. Passing Ulm, near which it receives the Iller, and at which point the river becomes navigable for small steamboats, it receives from the south the Lech and flows past Ingolstadt and Regensburg (Ratisbon), between which two towns it is joined by the Altmühl from the left; then, altering its course to the southeast, it receives the waters of the Isar and the Inn from the south, the latter joining it at Passau. It then traverses Upper and Lower Austria from west to east, passing Linz and Vienna, and about 40 miles beyond the latter city it enters Hungary near the town of Pressburg. Between Passau and Pressburg it receives from the south the Enns, and from the north the March, in a country rich in minerals, well peopled, and highly cultivated. Below Pressburg it divides, inclosing the low-lying islands called the Great and Little Schütt. Between Pressburg and Budapest, in which part of its course it passes the famous fortress of Komorn and the town of Gran (Esztergom), it receives from the north the Waag, the Neutra, the Gran, and the Eipel, and from the south the Raab. A few miles above Budapest it turns directly south and enters the great Hungarian plain, in which it is continually forcing new channels and silting up old ones, sometimes sweeping away towns, or capriciously removing its channel to a distance of several miles from those formerly upon its banks. Here it receives from the west the Drave. After this the river turns towards the southeast and, joined by the waters of the Theiss from the north and the Save from the west, sweeps past Belgrade, forming the boundary between Servia and Hungary and receiving the Morava from the south. From Belgrade to Orsova, where it reaches the borders of Wallachia, the Danube pursues an easterly course.

Leaving Orsova, the Danube passes the famous "Iron Gate," where the river formerly rushed over a broad plateau of rock 1400 yards wide. This rapid, which was followed by a series of

whirlpools, eddies, and shallow falls, formed an effectual bar to the upward progress of vessels, no craft drawing more than 2½ feet of water being able to pass it. In 1847-49, however, the obstruction formed by the Iron Gate was to some extent removed by blasting, and since then further improvements have been made in this part of the course, the Austrian government in 1890 having begun works for making the river constantly navigable at this point. The new passage was formally opened Sept. 27, 1896. The work of improvement cost \$10,000,000, and to meet the cost of maintenance and the annual interest, tolls are exacted at this point. For a short distance below this the river flows south between Wallachia and Servia and then, turning eastward, traverses a vast plain, in which it forms the boundary between Wallachia and Bulgaria. From the Carpathians it receives the Shil and the Aluta and Veda, and from the Balkan Mountains the Isker, the Osma, and the Yantra. Increased by these rivers and by numerous lesser streams, it progresses through a poorly cultivated and thinly peopled but fertile district, occasionally broadening like a sea, as at Hirsova, and encircling many islands. After being joined by the Sereth and the Pruth from the north, and about 50 miles from the Black Sea, it divides into several branches, forming a great delta with an area of about 4000 square miles. The principal channel mouth is the Sulina, through which the greater number of ships pass. This has been deepened by means of jetties, so as to admit vessels of 20 feet draft. The other principal mouths are the Kilja and St. George, which, although useless for navigation, discharge a large proportion of the water. The Danube is the chief natural highway for central European commerce. Communication has been established between it and the Rhine by the construction of the Ludwigs-Kanal in Bavaria, connecting the Altmühl with the Regnitz, an affluent of the Main. At the Peace of Paris in 1856 the navigation of the Danube was declared free to all nations, and its management was intrusted to two commissions—one representing the European Powers, another named by the states on the banks of the river. At the Berlin Congress of 1878 it was stipulated that no ships of war should navigate the Danube below the Iron Gate. The Austrian government has executed great works for the improvement of the navigation of the river at Vienna and for the regulation of its flow, so as to avert disastrous inundations. The Danube Steam Navigation Company has done much to increase the commerce. In the five years ending with 1890 this company handled 1,263,000 tons of traffic, while in the single year 1900, after improvements had been made, it handled 1,503,000 tons. Since 1900 it has steadily increased and now reaches 2,000,000 tons.

DANUBIAN PRINCIPALITIES. See

MOLDAVIA; WALLACHIA; RUMANIA.

DANUM. See DONCASTER (end).

DANVERS. A town, including several villages in Essex Co., Mass., 4 miles northwest of Salem, on the Boston and Maine Railroad (Map: Massachusetts, F 2). It contains St. John's Preparatory College (Roman Catholic), the Danvers State Hospital, Peabody Institute Library, Essex County Agricultural College, and Danvers Historical Society. The manufactures include shoes, leather, morocco, brick, electric

lamps, iron, rubber, soap, etc. The government is administered by town meetings. The water works and electric-light plant are owned by the municipality. Pop., 1890, 7454; 1900, 8542; 1910, 9407.

Until 1752, when it was incorporated as a separate town, Danvers was part of Salem. In 1855 the town was divided—the southern part becoming South Danvers, afterward Peabody, the northern keeping its original name. Here the witchcraft delusion of 1692 first appeared, and 10 of the inhabitants within this district were convicted and hanged, many more being arrested and acquitted. Danvers has many places of historic interest, notably the birthplace of Israel Putnam; Oak Knoll, the home of Whittier; and Mount Burnett, a favorite haunt of Hawthorne. Consult: Hudson, *History of the Town of Danvers* (Danvers, 1848); Hurd, *History of Essex County* (Philadelphia, 1888); Hines, *Historic Danvers; Celebration of the One Hundred and Fiftieth Anniversary of Danvers* (1902).

D'ANVILLE, dān'vél'. See ANVILLE.

DANVILLE. A city and the county seat of Vermilion Co., Ill., 125 miles by rail south of Chicago, on the Vermilion River, and on the Wabash, the Chicago, Indiana, and Southern, the Illinois Traction, the Chicago and Eastern Illinois, and the Cleveland, Cincinnati, Chicago, and St. Louis railroads (Map: Illinois, E 3). Among the features of interest are the Danville Branch National Soldiers' Home, Carnegie library, government building, Elks' Home, and five fine parks. Danville has coal-mining interests, machine shops and foundries, and manufactures zinc, handles, tools, boxes, glass, and clay products. Settled about 1830, the city was incorporated in 1867. It is governed by a mayor, elected biennially, and a council which selects the city engineer and confirms the executive's appointments to the police and fire departments and public library board. Other administrative officials are chosen by popular election. Pop., 1900, 16,354. Between 1900 and 1906 several suburbs were annexed. The population of the city in 1910 was 27,871; 1914 (U. S. est.), 30,847.

DANVILLE. A town and the county seat of Hendricks Co., Ind., 20 miles west of Indianapolis, on the Cleveland, Cincinnati, Chicago, and St. Louis Railroad (Map: Indiana, C 3). It is the seat of the Central Normal College, and contains a fine courthouse and Carnegie library. There are manufactories of flour, lumber products, canned goods, etc. The water works are owned by the municipality. Pop., 1910, 1640.

DANVILLE. A city and the county seat of Boyle Co., Ky., 117 miles south by west of Cincinnati, Ohio, on the Queen and Crescent and the Southern railroads (Map: Kentucky, F 4). The city is the seat of the Kentucky School for Deaf Mutes; Central University of Kentucky (Presbyterian), opened in 1822; and Kentucky College for Women (Presbyterian), founded in 1860. It has a park named in honor of Dr. Ephraim McDowell. Danville is in a stock-raising and agricultural region and carries on a large trade in tobacco and hemp. It is governed by a mayor, elected every four years, and a unicameral city council. The water works are owned and operated by the city. Here in 1785, 1786, 1787, and 1792 important conventions were held, the first State constitution for Kentucky being drawn up in 1792. Danville was the birthplace and early home of James G. Birney. The settlement was

first incorporated in 1789. Pop., 1890, 3766; 1900, 4285; 1910, 5420.

DANVILLE. A borough and the county seat of Montour Co., Pa., on the north branch of the Susquehanna River, 12 miles from its intersection with the West Branch, and on the Lackawanna, the Philadelphia and Reading, and the Pennsylvania railroads (Map: Pennsylvania, H 5). It has a large hospital, opera house, public library, and is the seat of a State hospital for the insane. There are deposits of limestone in the vicinity, and the borough has iron and steel works, silk and knitting mills, rolling mills, stove works, etc. The government is vested in a burgess, elected every three years, and a borough council. The water works and electric-light plant are owned and operated by the municipality. Pop., 1900, 8042; 1910, 7517.

DANVILLE. An independent city of Virginia, 141 miles by rail southwest of Richmond, on the Dan River and on the Southern Railroad (Map: Virginia, E 5). Situated in the Piedmont section of Virginia, amid picturesque mountain scenery, Danville rises from the river, which furnishes splendid water power, to an altitude of from 400 to 600 feet above tide. Its streets are paved with brick and Belgian blocks and are well shaded. The surrounding region is adapted to the cultivation of tobacco, grain, fruits, and other produce. The city is the seat of Roanoke Institute (Baptist), established in 1859; Randolph Macon Institute (Methodist), 1897; Danville School for Boys; and contains a general hospital, orphanage, Elks' Home, several parks, and a public library. Danville has an extensive tobacco trade and many tobacco warehouses and factories, a cheroot factory, several large cotton mills, furniture factories, flour mills, elevator works, knitting mills, and pants and overall factory. The government is administered, under the charter of 1890, by a mayor, chosen for two years, and a city council which controls the appointments to the important administrative offices: the sergeant, attorney, treasurer, and the clerk of the court being elected by the people. The water works and electric-light and gas plants are owned and operated by the city. Danville was incorporated as a town in 1792. It was for a short time the seat of government of the Southern Confederacy during its last days. Pop., 1900, 16,520; 1910, 19,020.

DANZIG, *dän'tsik*, in English commonly written **DANTZIC** (Pol. *Gdansk*, Lat. *Gedanum*). An important seaport, manufacturing centre, and fortress, capital of the Province of West Prussia, on the left bank of the western branch of the Vistula, about 3 miles from its mouth in the Baltic, 253 miles northeast of Berlin by rail, and in 54° 21' N. lat. and 18° 41' E. long. (Map: Prussia, H 1). The strong fortifications and moats which formerly surrounded the city were removed on the north and west sides in 1895-96, and the area thus secured was laid out in streets and public gardens. On the east and south sides the defenses remain, strengthened by 20 bastions. To the east is a chain of forts which extend north along the Vistula to its mouth at Neufahrwasser. In addition, the garrison possesses the means of laying the surrounding country under water on three sides. The former, which flows through the city in two branches, divides the older sections of the Altstadt, Rechtstadt, and Vorstadt from the newer Niederstadt and Langgarten. The Radaune, which enters the town through an artificial channel, separates

the Altstadt from the Rechtstadt. Between the two branches of the Mottlau is the Speicherinsel, an island on which enormous granaries have been erected for the accommodation of the vast stores of grain exported from Danzig. The rivers and canals are crossed by about 50 bridges. The Lange Brücke, a quay extending along the bank of the Mottlau, opposite the island, is one of the picturesque sights of the town. The city is generally very medieval in aspect, successive old styles of its buildings having been well preserved, including in the residences the countless gable facades and a peculiar feature known as *Beischläge*—elevated, open-air landings. Many of the streets of Danzig are narrow and crooked, but the principal streets, Lange Gasse and Langer Markt, intersecting it from east to west, abound in fine specimens of antique architecture and have a most picturesque appearance. Among the most noteworthy buildings are the church of St. Mary, a fine structure, commenced in 1343, but not finished until 1503, and containing, besides a fine high altar by Michael and other interesting objects of art, a celebrated picture of the "Last Judgment," generally attributed to Memling; the church of St. Catharine; Trinity Church; the fine fourteenth-century Gothic Rathaus, surmounted by a graceful spire; the Artushof, or Junkerhof, the former merchants' guild, now used as the exchange; and the old Franciscan monastery, restored in 1871, containing the municipal museum.

Danzig is the seat of the provincial government and of a provincial court. The city's affairs are administered by a municipal council of 63 and an executive board of 23 members. It has exhibited an enterprising spirit in the matter of municipal undertakings. It has excellently organized fire and street-cleaning departments. Two large aqueducts supply it with water, and a modern system of sewers connected with sewage farms on the Baltic gives the town a satisfactory drainage. The municipality maintains gas works, an electric-light plant, slaughterhouses, and a market hall. Danzig is well provided with educational institutions, which include two gymnasias, a realgymnasium, two realschulen, a navigation school, military school, industrial trade and music schools, a municipal library (over 100,000 volumes), and a theatre. Its charitable institutions include two municipal hospitals as well as numerous other institutions.

Danzig has advantageous connections by rail, river, and sea. It maintains a large trade in lumber and grain, serving as a clearing place for the agricultural products of eastern Prussia and the whole of the Vistula region, which embraces a considerable part of Russian Poland. The imports include coal, iron, petroleum, machinery, spices, and other agricultural products of tropical countries, whereas the exports, as already stated, consist largely of lumber, grain, and a few other agricultural products. The growth of Danzig's sea trade has been interfered with by the competition of Stettin and of the Russian ports on the Baltic, and it is losing its relative importance as a port. The manufactures of Danzig are developing rapidly. There are large ship-building yards, breweries, distilleries, and factories for the production of firearms, machinery, and other ironware, paper, glass, soap and candles, flour, sugar, etc. Danzig is the seat of a United States consular agency. Pop., 1900,

141,000; 1910, 170,337. The environs are very attractive.

Danzig is mentioned in 997, when Christianity was first preached there. Its possession was contended for by the Danes, Swedes, Pomeranians, and Teutonic Knights, of whom the last became masters of the town in 1310. Under their rule Danzig prospered exceedingly; about 1358 it joined the Hanseatic League. In 1466 the town declared itself a free city, under the protection of Poland. The wars of the seventeenth and eighteenth centuries destroyed its prosperity, and though it was left a free city on the first partition of Poland, in 1772, its trade ceased almost entirely. In 1793 it became Prussian. Taken by the French Marshal Lefebvre (who received the title of Duke of Danzig) in 1807, it was retaken by the Allies in 1814 and restored to Prussia. Consult: Prutz, *Danzig, das nordische Venedig* (Leipzig, 1868); Wislulanus, *Geschichte der Stadt Danzig* (Danzig, 1891); Puttner, *Danzig* (ib., 1899).

DANZIG, DUKE OF. See LEFEBVRE, FRANÇOIS JOSEPH.

DAPHNE, dāf'ně (Lat., from Gk. Δάφνη, laurel). The personification of the laurel, Apollo's sacred plant. According to the legend, Daphne was a nymph, beloved and pursued by Apollo. On crying to her mother, Earth, for help, she was transformed into a laurel, which Apollo chose as his favorite plant.

DAPHNE. A magnificent grove and sanctuary of Apollo, near Antioch (q.v.), on the Orontes. It was founded by Seleucus Nicator, who localized here the story of the transformation of the nymph. The temple of Apollo, containing a statue of the god by Bryaxis (q.v.), stood in a grove of cypress and bay trees and was surrounded by baths, porticoes, and gardens. The beauty of the surroundings made it a favorite place of resort for the luxurious, and it has been described as a scene of continual vice. With the growth of Christianity the worship of Apollo fell into neglect, and shortly after the attempt by the Emperor Julian (q.v.) to revive its splendors the temple was burned and the site gradually abandoned. The probable site of Daphne is now called Bēt el-Mā and still shows luxuriant vegetation, though the ancient remains are scanty.

DAPHNE. A genus of plants of the family Thymelacææ, containing about 80 species of European or Asiatic shrubs or small trees, some of which have deciduous and some evergreen leaves, and all more or less acid in all their parts, which makes some of them even caustic. The berries are poisonous, but the flowers of some are deliciously fragrant. To this genus belongs the *Daphne mezereum*, well known both for the fragrance of its flowers and for its medicinal uses, naturalized in some places in England and escaped in Canada and the United States. The garou bush (*Daphne gnidium*), a native of the south of Europe, less hardy than *D. mezereum*, has the same medicinal properties. The spurge laurel (*Daphne laureola*), a native of Great Britain, is an evergreen shrub 3 to 4 feet high, with obovate-lanceolate leaves, which grow in tufts at the end of the branches and give it a remarkable appearance. It grows well under the shade of trees. *Daphne odora*, a species introduced from Japan, has lemon-scented leaves. Of species in cultivation, *Daphne mezereum* is the only one hardy as far north as New York. The evergreen species are, as a rule, less hardy, though *Daphne cneorum* is fairly resistant. (For

illustration, see Plate of MOUNTAIN PLANTS.) From the bark of some species of *Daphne* and of the most nearly allied genera paper is made in different parts of the East, particularly Nepal paper, from that of *Daphne cammabina*. Slips of the inner bark are boiled in a lye of wood ashes for half an hour, till quite soft; are then reduced to a homogeneous pulp by beating with a wooden mallet in a mortar, churned with water into a thin paste, and poured through a coarse sieve upon a cloth stretched on a frame. The paper is subsequently polished by friction, with a shell or a piece of hard wood, and is remarkable for its toughness, smoothness, and durability. Most of the paper used in Tibet is made from the bark of different species of *Daphne* and allied genera, particularly of *Edgeworthia gardneri*, a beautiful shrub, with globes of waxy, cowslip-colored, deliciously fragrant flowers, growing on the Himalaya, at an elevation of 6000 to 7000 feet. The bark of *Lasiosiphon madagascariensis* is made into paper and ropes in Madagascar.

DAPHNEPHORIA, dāf'ně-fō'ri-a. See GREEK FESTIVALS.

DAPHNIN, dāf'nin (from *Daphne*), C₁₅H₁₈O₈+2H₂O. A glucoside found by Vauquelin in the *Daphne alpina* and by Gmelin and De Baer in the *Daphne mezereum* and readily decomposed into sugar and a substance called *daphnetin*, which, like the *æsculetin* obtained from the glucoside *æsculin*, has the composition represented by the molecular formula C₁₅H₁₀O₈. *Daphnetin* has also been prepared artificially.

DAPHNIS, dāf'nis (Lat., from Gk. Δάφνις). A favorite character in the bucolic poetry of the ancients, reputed inventor of such poetry. The first certain appearance of the story in literature is in the early part of the third century B.C., in Theophrastus and Theocritus. In its earliest form it seems a Sicilian folk tale. The herdsman Daphnis, son of Hermes and a nymph, was beloved by a nymph, who made him promise never to love a mortal. Under the influence of wine he was seduced by a Sicilian princess; thereupon the nymph punished him with blindness or petrification. The bucolic poets altered the details of this very common folk tale to suit themselves, and Daphnis became merely a conventional figure. Late writers indeed made him the inventor of the Sicilian herdsman's song, which was regarded as the original bucolic poetry. Consult Prescott, "A Study of the Daphnis Myth," in *Harvard Studies in Classical Philology*, vol. x (Boston, 1890). See CHLOE; DAPHNIS AND CHLOE.

DAPHNIS AND CHLOE, klō'ě (Gk. Δάφνις καὶ Χλόη, *Daphnis kai Chloë*). The title of an exquisite Greek pastoral love story by Longus (q.v.). It is the source of Tasso's *Aminta*, Bernardin de Saint-Pierre's *Paul et Virginie*, and Ramsay's *Gentle Shepherd*, through the rendering into French by Amyot (1559).

DAPONTES, dā-pōn'tēs, CONSTANTINOS (c. 1714-84). A Greek monk and poet. He was attached to the court of the Hospodar of Moldavia, Mavrocordatos, and frequently came into conflict with the Mohammedan authorities. He was the most distinguished of the modern poets of the Greek church, and several of his works, such as the *Garden of Mercy*, are still read. He died in a monastery on Mount Athos. One of his works has been translated into French by E. Legrand under the title *Ephémérides Daces, ou chronique de la guerre de quatre ans, 1736-39* (1880-88). Consult the biographical sketch in vol. iii of Legrand's work.

DAFFLE. In Cervantes' *Don Quixote*, the ass ridden by Sancho Panza.

DAQIQI, dâ-kê'kâ. The name of a Persian poet, one of the predecessors of Firdausi. See **FIRDAUSI**; **PERSIAN LITERATURE**.

DARAB, dâ-râb', or **DARABGHERD**, -gêrd' (Pers., city of Darius, from *Dârâ*, OPers. *Dârayavansh*, Gk. *Δαρείος*, *Darceios*, Darius + *gird*, OPers. *vardana*, city: connected with Lat. *urbs*, city). A town of Persia in the Province of Fars, situated on a small river, about 140 miles southeast of Shiraz (Map: Persia, E 6). It has some tanneries and exports dates, oranges, and lemons. About 3 miles south of the town is situated a caravansary hewn in rock, and also a relief commemorating the victory of Shahpur I over Valerian (260 A.D.). It is claimed Darius founded the town. The population is estimated at from 4000 to 12,000.

DARAGA, dâ-râ'gâ. A town of Luzon, Philippines. See **CAGSAC**.

DARHANGA, dâr-bûn'gâ. The capital of a district of the same name in the Patna division, Bihar and Orissa, India (Map India, E 3), on the Little Baghmati River, 68 miles northeast of Patna. Its chief building is the maharajah's palace, with noteworthy menagerie and library. It has a large market place, important bazars, and a hospital. Its chief exports are oil seeds, ghi and timber, and a considerable trade is carried on in the agricultural and mineral products of the region. Pop., 1891, 73,561; 1901, 66,244; 1911, 62,628.

D'ARBLAY, dâr'blâ', FRANCES BURNLEY (1752-1840). An English novelist. She was a daughter of Charles Burney, a musician, and was born at King's Lynn, June 13, 1752. Eight years later the Burneys removed to London. At the famous musical assemblies given by her father Miss Burney saw, from the outside, fashionable life, and this she depicted with spirit and humor in her first novel, *Evelina* (1778). No novel since *Clarissa Harlowe* attracted more notice. It was read by Burke, Reynolds, and Johnson, and lavishly praised. This brilliant success was followed by *Cecilia* (1782), which, though not so fresh as *Evelina* and a little heavy, had a large sale. In 1786 Miss Burney was appointed second keeper of the robes to Queen Charlotte. Disliking the service, she resigned her position five years later. While visiting her sister at Mickleham, she became acquainted with a French refugee, General D'Arblay, whom she married in 1793. The rest of her life was passed partly in England and partly in France. She published two other novels, *Camilla* (1796) and *The Wanderer* (1814), neither of which is readable. A play of hers, *Edwy and Elvina*, was performed in 1795 and was unsuccessful, though Mrs. Siddons and Kemble took the leading parts. She also published memoirs of her father (1832), written in an affected style resembling her last novels. In 1842-46 appeared her interesting *Letters and Diaries*. A new edition in six volumes was published in London in 1904-05. The *Early Diary, 1768-1778* (2 vols., New York, 1907) was edited by A. R. Ellis. Consult: Macaulay, *Essays*; Dobson, *Fanny Burney, Madame D'Arblay* (New York, 1903); C. Hill, *Fanny Burney at the Court of Queen Charlotte* (New York, 1912).

DARBOUX, dâr'bô', JEAN GASTON (1842-). A French geometer, born at Nîmes. He studied at the Ecole Normale, was appointed senior professor of geometry in the faculty of

sciences there, and in 1887 became dean of that faculty. His *Mémoire sur les solutions singulières des équations aux dérivées partielles* was in 1876 awarded the mathematical grand prize by the Academy of Sciences. In 1904 he delivered an address before the section of geometry of the International Congress of Arts and Sciences on "A Survey of the Development of Geometric Methods" (published, 1904). His works include: *Sur les théorèmes d'Ivory relatifs aux surfaces homofocales du second degré* (1872); *Mémoire sur l'équilibre statique* (1877); *Leçons sur la théorie générale des surfaces et les applications géométriques du calcul infinitésimal* (1887-96; 2d ed., Paris, 1914). Consult E. Lebon, *Gaston Darboux: Biographie, Bibliographie, etc.* (Paris, 1910).

DARBOY, dâr'bô', GEORGES (1813-71). A French prelate, born near Langres. He was educated at the Seminary of Langres and became professor there in 1840, having been ordained priest in 1836. He went to Paris in 1845, became almoner of the Collège Henri IV in 1846, and titular vicar of Paris in 1855. He was in high favor at the court of Napoleon III, was made Bishop of Nancy in 1859, Archbishop of Paris in 1863, and afterward grand almoner to the Emperor, and Senator. He stoutly opposed the declaration of the dogma of papal infallibility at the Vatican Council. When it was declared, he submitted, yet in his diocese continued to disregard papal interference. Decidedly at variance with the Jesuits, he incurred the displeasure of Pius IX. During the siege of Paris in 1870-71 he was indefatigable in his care for the sick and wounded soldiers and could not be induced to leave his post or to seek safety in flight. He was seized as a hostage by the Communists, and while the combat raged in the streets of Paris after the entry of the Versailles troops, he was shot, with several of his priests, in the court of La Roquette Prison. Among his writings worthy of mention are: *Saint Thomas Becket, sa vie et ses lettres* (1859); *Les femmes de la Bible* (8th ed., 1876); *Les saintes femmes* (4th ed., 1877). For his biography, consult Foulon (Paris, 1889).

DARBY. A borough in Delaware Co., Pa., 5 miles southwest of Philadelphia, on the Baltimore and Ohio and the Philadelphia, Baltimore, and Washington railroads, and on Darby River (Map: Philadelphia and Vicinity, C 6). It has a public library, erected in 1743, and a Friends Meeting House and burying ground more than 200 years old. There are woolen, silk, cotton, and worsted mills, and manufactories of water filters, wooden tanks, augurs, and bits. Darby was settled about 1660. Pop., 1900, 3429; 1910, 6305.

DARBY, JOHN NELSON. See **PLYMOUTH BRETHREN**.

DARBY AND JO'AN. The hero and heroine of an eighteenth-century ballad which first appeared in the *Gentleman's Magazine*, March, 1735, under the title *The Joys of Love Never Forgot: A Song*. Its author was Henry Woodfall, a London printer. In his youth Woodfall had been apprenticed to the printer John Darby, of Bartholomew Close; and he took Darby and his wife as the subject of this popular song.

D'ARCEU, CHEVALIER DE. See **ARMOR PLATE**. **DARCET**, dâr'sâ', JEAN (1725-1801). A French chemist, director of the porcelain works at Sèvres. He was one of the first to manufacture porcelain in France. He devoted himself

chiefly to applied chemistry and made valuable contributions to that science. In 1774 he was appointed professor of chemistry in the Collège de France and in 1795 he became a member of the Institute. His publications include: *Sur l'action d'un feu égal sur un grand nombre de terres* (1766-71); *Expériences sur plusieurs diamants et pierres précieuses* (1772); *Rapport sur l'électricité dans les maladies nerveuses* (1783).

DARCET, JEAN PIERRE JOSEPH (1777-1844). A French industrial chemist, son of Jean Darcet (q.v.). He introduced important improvements in the manufacture of soap, soda, alum, sulphuric acid, etc., and contributed a number of important papers to the *Annales de chimie et de physique*.

DARDANELLES, dār'dā-nēlz' (named after the Greek city Dardanus, on the eastern side; the ancient Hellespont). A narrow channel separating southeast Europe from southwest Asia and uniting the Sea of Marmora with the Ægean Sea (Map: Turkey in Europe, B 2). It extends from northeast to southwest, between lat. 40° and 40° 30' N. and long. 26° 10' and 26° 40' E., having a length of about 42.3 miles and a breadth varying from 1 to 5 miles. The average depth of the channel is 180 feet. From the Sea of Marmora a strong current runs through the strait to the Grecian Archipelago, except in the presence of a strong southwest wind, but there is an undercurrent in the opposite direction.

The European shores are steep and sterile, while the Asiatic shores are sloping and clad with beautiful forests. To prevent an attack on Constantinople by water from the Ægean, the Dardanelles is strongly fortified on both sides with many guns of large calibre. The narrow and meandering course of the strait lends itself admirably to render the Dardanelles a formidable natural fortress. A treaty concluded between the five Great Powers and Turkey in 1841 arranged that no ship of war belonging to any nation save Turkey should pass the Dardanelles without the express consent of Turkey. All merchant ships are still required to show their papers to the Ottoman authorities as they pass the narrows. These provisions were confirmed at London in 1871 and at Berlin in 1878, but in 1891, by an agreement with the Porte, Russia secured for her "volunteer fleet" the right of passage through the Dardanelles. The Dardanelles is celebrated in ancient history on account of Xerxes and Alexander having crossed it, the former in 480 B.C. to enter Europe, and the latter in 334 B.C. to enter Asia. The point at which Xerxes crossed was in the neighborhood of Abydos, on the Asiatic shore, opposite to Sestos, where the strait is 6500 feet wide. Alexander crossed at nearly the same place, and here also, in the ancient legend, young Leander nightly swam across to visit Hero—a feat performed in modern times by Lord Byron. The Asiatic coast of the Dardanelles is known for its gold mines. Numerous old workings are found at Astrya and Osmanlar, but operations have not been carried on in modern times.

DARDANI. In Greek legend, a people living in the heart of the Troad, descendants of Dardanus (q.v.), adjoining the territory of Ilium. Under the leadership of Æneas (q.v.) they were allies of the Trojans and were so closely identified with them that their name was often used, particularly by Roman poets, as equivalent to Trojan. Consult Leaf, *Troy: A Study in Homeric Geography*, pp. 176-180 (London, 1912).

The name "Dardani" was borne also by a sturdy people of Upper Mæsia.

DAR/DANUS (Lat., from Gk. Δάρδανος). The mythical ruler of the Dardanians, son of Zeus and Electra, the daughter of Atlas. In some legends he is closely connected with Arcadia and Samothrace and is celebrated as introducing the Samothracian mysteries and the worship of Cybele into Asia Minor. At Troy he married the daughter of Teucer (q.v.). In Roman story he was said to have come to Phrygia from Italy, so that Æneas, who was his descendant through Tros, Assaracus, and Anchises, really returned to the home of his ancestors. See DARDANI.

DARDS (Skt. *Darada*, Gk. Δάρδαι, *Dardai*, Δάρδαροι, *Dardaroi*, or Δέρπαι, *Derpái*). The natives of what is known as Dardistan, a region of Asia between Kafiristan and Balistan, to the northwest of Kashmir. The Dards (Dardi, Dardu) belong by language to the Aryan stock. Physically they are of the short-statured dolichocephalic (or mesocephalic) variety of the white race, rather dark-skinned and black-haired, but presenting also a number of taller and lighter individuals. Among the chief divisions of the Dards are the Chins and the Yeshkuns. The religion of the Dards is now Islamism, which only recently has superseded Buddhism among them. Surrounded by Asiatics, these Aryans seem to have preserved some of the primitive social characteristics of their remote ancestors, and in spite of Mongoloid intermixture they have never been completely Orientalized. Since Leitner's *Languages and Races of Dardistan* (1867-73), the more recent literature of the subject includes Biddulph's *Tribes of the Hindoo Koosh* (1880); De Ujfalvy's *Aus dem westlichen Himalaya* (1884); Leitner's *Hunza and Nagar Handbook* (1893).

DARE. See DACE.

DARE, VIRGINIA (1587-?). The first child born in America of English parents. She was born on Roanoke Island, Va. (now North Carolina), and was the granddaughter of John White, who was sent out by Sir Walter Raleigh as Governor of the Colony, which, during the founder's absence in England, disappeared without leaving a trace.

DAR-EL-BEIDA, dār'el-bā'dā, or CASA-BLANCA (Ar., white house). The largest seaport of Morocco, north Africa, handling over one-fourth of the entire trade of the country, situated on the west coast (Map: Africa, D 1). It is surrounded by walls and has a deep but unprotected roadstead. Its population is estimated at 25,000, including about 5000 Christians. Wool and leather are the principal exports. The town was founded in 1468 by the Portuguese. It was the centre of the revolt against the assumed control of Moroccan ports by the French in 1907, and its neighborhood was the scene of numerous engagements. See MOROCCO.

DARES, dā'rēz (Lat., from Gk. Δάρης). A Trojan priest of Hephæstus, mentioned in the *Iliad*, v. 9. To him was attributed an account of the destruction of Troy, extant only in a Latin version. It is doubtful whether the Latin work had a Greek original; if it had, that original cannot have been older than the Hellenistic period. In the Middle Ages the Latin version, then much read, was ascribed to Cornelius Nepos, but in reality it belongs to the fifth century A.D.; it is quoted by Isidorus. Together with the work

of Dictys (q.v.) of Crete, it was the basis of a famous romance written by Guido delle Colonne (q.v.) in the thirteenth century. The best edition is by Meister (Leipzig, 1873). On the various late versions, consult: Dunger, *Die Sage vom trojanischen Kriege in den Bearbeitungen des Mittelalters* (Dresden, 1869); Körting, *Dictys und Dares* (Halle, 1874); Von Fleckenberg, *Daresstudien* (1908).

DAR-ES-SALAAM, dār'es-sā-lām'. A rapidly growing city, the capital of German East Africa (q.v.), situated on the coast a few miles south of Zanzibar (Map: Congo Free State, G 4). It has a good harbor and a number of churches, schools, and public buildings, government and customs offices, the governor's residence, state hospital, and barracks. In the botanical gardens it has a collection of African flora. There is telegraph connection with Zanzibar, Tanga, Kilwa, and other important centres in the colony. Principal exports are ivory, rubber, and copal. Its population is about 24,000, including about 500 Europeans and 480 Arabs.

DARESTE DE LA CHAVANNE, dā'rēst' de là shā'van', ANTOINE ELISABETH (LÉOPHANE) (1820-82). A French historian, born in Paris. He occupied the chair of history successively at the Collège de Rennes, the Collège Stanislas in Paris, the University of Grenoble, and that of Lyons, with which he remained associated in that capacity for more than 20 years. His partiality to the Catholic interests, however, compelled his resignation, in 1878. His principal publication is *l'Histoire de France* (2d ed., 7 vols. and suppl., 1879), a work distinguished by remarkable accuracy and profound scholarship, but now superseded by Lavisse. Consult the biographical sketch (Lyons, 1883) by Heinrich.

DARÉT, JACQUES. See FLEMMALLE, MAÎTRE DE.

DAR FERTIT, dār fēr-tēt'. A region in the Anglo-Egyptian Sudan, situated south of Darfur, in the upper part of the basin of the Bahr-el-Ghazal (Map: Congo, D 1). It is a country rich in ivory and rubber, but very thinly populated. It was once well peopled, but as the slave trade drew on it at the beginning of the nineteenth century, the old race stocks died out. The population is extremely heterogeneous, consisting of a number of negro tribes.

DARFUR, dār'fūr (Ar., House of the Furs, a negro tribe of the region). A region with undefined boundaries in central Africa, under British control. It lies between Wadai, Kordofan, the Libyan Desert, and the Bahr-el-Ghazal region, covering an area of about 150,000 square miles (Map: Africa, G 3). It is traversed through the centre in a direction from northeast to southwest by the volcanic mountain range Marrah, whose extinguished craters rise above 5000 feet. On the east and west it is generally flat and sandy. Among the mountain chains there are numerous fertile valleys growing wheat, cotton, sesame, tobacco, etc. During the rainy season, which lasts from June to September, the lower portions of the country are frequently covered with water, which produces a rich vegetation. Cattle raising is carried on by the natives on a large scale. The manufacturing industries are insignificant and are chiefly confined to weaving and the manufacturing of small metal products. In some parts of the country copper and iron ores are found. The population is variously estimated, 750,000 being commonly given. It consists of Arabs and Furs, all pro-

fessing Islam. Capital, El Fasher. Prior to the revolt of the Mahdi, Darfur was a great centre of the caravan trade. It was annexed to Egypt in 1874-75, but was surrendered to dervish rule after the Mahdi's revolt in 1883. In 1890-91 the greater part was acknowledged by Germany and Italy to be within the British sphere of influence. In 1898 it became a part of the Anglo-Egyptian Sudan. The management of its internal affairs is left to its hereditary sultan.

D'ARGENS, dār'zhān'. See ARGENS.

DARGOMYZHSKY, dār'gō-mizh'skē, ALEXANDER SEMEYEVICH (1813-69). A famous Russian composer; founder, with Glinka, of the Russian National School of Music. He was the son of a wealthy nobleman in the Government of Tula. Speechless to his sixth year, he early exhibited fondness for music and was taught the piano at six and violin at eight; his teachers, later, were Schöberlechner, a pupil of Hummel, in piano, and Zeibich in musical theory and singing. At St. Petersburg in 1833 he met Glinka, who lent Dargomyzhsky his copy of Delius's lectures on musical theory, which "he studied through in five months." Orchestration and composition he learned practically by assisting Glinka in the production of his *Life of the Czar* and by organizing various aquatic serenades on the Neva River, with private orchestras. He had by this time acquired a reputation as a song writer, pianist, and quartet violinist, and he decided to embrace music as a career. Later, in 1843, he gave up his governmental clerkship. He selected Hugo's *Lucrezia Borgia* for an opera, but, on the advice of Zhukovsky (q.v.), abandoned it in favor of *Esmeralda*, based on the *Hunchback of Notre Dame*. In 1839 the finished opera was translated into Russian, but was not produced till 1847, at Moscow. In 1840 he began a cantata, *The Triumph of Bacchus*, but, owing to the delays of *Esmeralda*, he stopped work on it and did not finish it till 1848, as an opera ballet, first produced in 1868. In 1844-45 he traveled, meeting Halévy and also Fétis, who made him known to western Europe. The delays of his opera "deadened his inspiration," but his personal success in 1853 at a charitable concert encouraged him, and in 1855 the opera *Rusalka* ('The Mermaid') was ready. Its production at St. Petersburg (1856) left much to be desired, and the public received it coldly; the Halévy-Meyerbeer style of *Esmeralda* gave way to powerful dramatic recitatives, pronounced characterization, especially in comic scenes, and a strong national element. Only 10 years later the opera, when revived, achieved an unheard-of success. During this decade Dargomyzhsky became more and more retired. He spent his time giving vocal instruction to gifted amateurs and in a measure trained a new generation of singers. He wrote three orchestral works—*Kazachok* (Cossack dance), *Finnish Fantaisie*, and *Baba-Yaga*—and while in Brussels (1864-65) won high praise with the *Kazachok* and the overture to *Rusalka*. His songs (he wrote about 100 in all) of this period possess more than ordinary merit. Among the members of the Young Russian school he found the moral support he so sadly needed, and in 1868 he undertook to embody his new theories by setting to music Pushkin's dramatic sketch *The Stone Guest*, a variant of the Don Juan story. Even during his final illness he worked unceasingly and so successfully that after his death only 10½ lines had to be completed by Cui. The orchestration was finished by Rimsky-

Korsakoff. The work was produced in 1872, but had little success. Beginning in the style of the Italian opera, Dargomyzsky gradually changed his views of dramatic music and in his last work carried Wagner's theories to such extremes that he practically sacrificed the music to the drama. Of a fourth opera, *Rogdana*, he had sketched several scenes. Consult: Cui, *La musique en Russie* (Paris, 1880); Pougin, *Essai historique sur la musique en Russie* (Turin, 1897); Fétis, *Biographie universelle des musiciens* (Paris, 1862).

DAR'IC (Gk. *dapeukós, dareikos*; supposed by the Greeks to be derived from *Δαρείος, Dareios*, OPers. *Dārāya-va(h)uš*, Darius, but probably really from Babylonian *dariku*, weight, measure). A gold coin of ancient Persia, used also in Greece. On the obverse is the figure of a crowned archer kneeling, holding in one hand a spear, and in the other a bow, and on the reverse an irregular oblong stamp. It contained about 125 grains of gold, an amount of gold worth now \$5.40.

DAR'IEL. A transverse gorge in the main chain of the Caucasus Mountains, at an altitude of 4122 feet. It is traversed by the main road, known as the Georgian Military Road, from Vladikavkaz to Tiflis, which ascends to the Pass of the Cross, 8015 feet, and is the *Porta Caucasica* of Strabo and the *Dariallan* of Oriental authors. The Dar'iel Gorge has served as a strategic point for the successive mountain tribes which overran Georgia, and which completely dominated the defile before it came under Russian power.

DARIEN'. An open-mouthed gulf of the Caribbean Sea on the western part of the north coast of South America, separating the Republic of Panama and the Colombian Department of Bolívar (Map: Colombia, B 2). Its southern extension, called Gulf of Urabá (a name originally given to the Gulf of Darien), affords good anchorage. The rainy coastland is hilly and thickly overgrown. The chief affluent is the Atrato (q.v.). The name "Darien" was also applied to the Isthmus of Panama (q.v.) and to a province in the Republic of New Granada, corresponding to the present Republic of Panama. One of the earliest Spanish settlements on the mainland was in Darien, the region being then also called by the Spaniards *Castilla de Oro* ('the Golden Castile') and forming the best-known part of their *Tierra Firme*. In 1513 Balboa, Governor of the Darien settlement, crossed the isthmus with 290 men and on September 25 first caught sight of the Pacific. Consult Dr. C. L. G. Anderson, *Old Panama and Castilla del Oro*.

DAR'IEEN. A residential town in Fairfield Co., Conn., 5 miles northeast of Stamford, on the New York, New Haven, and Hartford Railroad (Map: Connecticut, B 5). In 1913, on the shore of Gorham's Pond, an elaborate and beautiful pageant was held, depicting the history, life, and problems of the town. Pop., 1900, 3116; 1910, 3946.

DARIEN. A city and port of entry, and the county seat of McIntosh Co., Ga., 63 miles south by west of Savannah, on the Altamaha River, 12 miles from the ocean, and on the Georgia Coast and Piedmont Railroad (Map: Georgia, E 4). It exports large quantities of pine lumber, crossties, handles, rice, fish, and garden produce. Settled in 1736, Darien was incorporated as a town in 1816 and was char-

tered as a city in 1818. It is governed by a board of five aldermen selected by the grand jury, one of these five being chosen mayor. The water works are owned by the city. Pop., 1910, 1391.

DARIEN' SCHEME. A scheme projected by William Paterson (q.v.) in 1695, for the purpose of forming a settlement on the Isthmus of Darien for controlling the trade between the Eastern and Western hemispheres. It was one of the most disastrous commercial speculations in history. Nine hundred thousand pounds were quickly subscribed, a large part of it by Scottish merchants, though only a little more than half of the subscriptions are said to have ever been paid up. In 1698, 1200 colonists, recruited in Scotland, proceeded to the isthmus to lay the foundations for their prospective commercial centre, "New Caledonia." Their number was rapidly reduced, however, by starvation and disease, and in June, 1699, the survivors returned. Soon afterward the Scotch sent out another company, of 1300, but this likewise was soon forced to return, and a third company, which arrived in February, 1700, was almost immediately driven away by the Spaniards. For a brief account of the enterprise, consult H. H. Bancroft, *History of Central America*, vol. ii (San Francisco, 1883).

DA RIMINI, da re'mè-nè, FRANCESCA (?-1288). A woman of extraordinary beauty, daughter of Guido da Polenta, Lord of Ravenna. She was married to Gianciotto Malatesta of Rimini, a cripple, who detecting her in criminal relations with his brother, Paolo, killed them both. The story forms the basis of one of the most famous episodes of Dante's *Divina Commedia* (*Inf.*, v. 73-142), for which consult De Sanctis, "Francesca da Rimini," in *Nuovi Saggi critici* (Naples, 1898). Leigh Hunt wrote a poem, the *Story of Rimini* (1819). Silvio Pellico, G. H. Boker, and D'Annunzio have each found in the tale the subject of a tragedy, and so also has the English poet Stephen Phillips (q.v.) in his *Paolo and Francesca*. It also inspired a famous painting by Fuseli. Consult bibliography in Koch's *Dante Catalogue* (Ithaca, 1900).

DAR'YUS. The name of several Persian kings, and, like the Egyptian Pharaoh, *titular* and not *personal*. According to Herodotus (vi, 98), *Δαρείος* signifies 'one who restrains'; but the old Persian form, *Dārāya-va(h)uš* shows that it signifies 'upholding what is good.'—The most famous of the name is called Darius I, or DARIUS HYSTASPES, from his father's name. (See HYSTASPES.) He was born 558 B.C., and was a Persian and of the Achaemenian line. On the death of Cambyses (522 B.C.) he leagued himself with six other nobles to murder Smerdis the Magian, who had usurped the throne. The conspirators were successful in their plot, and Darius was chosen King. An account of these occurrences is given in the great Behistun inscription, which serves to supplement or correct the narrative of Herodotus. His position at first was very insecure, but his caution, skill, and energy enabled him to govern his vast dominions for 36 years. To strengthen himself, he married the daughter of Otanes, who had been the head of the conspiracy, and likewise took three wives from the royal household, viz., two daughters of Cyrus and one of Cyrus's son, Smerdis. He then divided his empire into 20 satrapies and determined the

exact amount of the taxation to be borne by each. In some of the remoter provinces great confusion seems to have prevailed after the death of Smerdis the Magian; and a proof of how little Darius could effect at first is afforded by the conduct of Orotes, the Governor of Sardis, who for some time was quite defiant of his authority. The inscriptions of Darius contain the account of no fewer than 9 or 10 rebellions against his sway. Babylon also revolted, and Darius besieged the city unsuccessfully for two years. At last, however, it was taken by an extraordinary stratagem of his general, Zopyrus (516). It is more likely, however, that the account of the conquest of Babylon, as given by Herodotus (iii, 150), belongs to the first siege of the city. In the year 514 B.C. Darius is thought to have begun the great rock inscription of Behistun, which records the events of his reign. In 513 Darius, with an army of 700,000 (though this figure, given by Herodotus, is in all probability absurdly exaggerated), crossed the Bosphorus by a bridge of boats, marched to the mouths of the Danube, crossed the river, and advanced against the Scythians. The expedition proved a failure. Darius retreated, but detached from his main force an army of 80,000 men, under Megabyzus, to conquer Thrace, while he himself returned to Asia, whence he extended his authority in the east as far as the Indus. About 501 B.C. the Ionian cities rose in revolt against Persian dominion. They were unsuccessful, the final victory of the Persians being achieved in the naval battle at Lade and the taking of Miletus (494). The assistance given by the Athenians and Eretrians to the Ionians, and the part which they had taken in the burning of Sardis, determined Darius, who was also influenced thereto by the banished Hippias, to attempt the subjugation of the whole of Greece. In 492 he sent Mardonius with an army into Thrace and Macedonia, and at the same time dispatched a fleet against the islands. The former was routed by the Brygi in Thrace, the latter was shattered and dispersed by a storm when rounding the promontory of Mount Athos. In 490 he renewed his attempt. His fleet committed great ravages in the Cyclades, but his army was entirely defeated at Marathon by the Athenians, under Miltiades, the tyrant of the Chersonese. In the midst of his preparations for a third expedition Darius died, about 486 B.C., and was succeeded by his son Xerxes. His tomb is still to be seen at Naksh-Rustam. Darius was an able ruler, and he organized and wisely administered the kingdom which Cyrus had founded. His liberality to the Jews in connection with the rebuilding of the temple at Jerusalem is referred to in the Bible. For the inscriptions of Darius, consult: Rawlinson, *Journal of the Royal Asiatic Society of Great Britain*, vol. x (London, 1847); Spiegel, *Alt-persische Keilschriften* (Leipzig, 1882); Weissbach and Bang, *Alt-pers. Keil.* (ib., 1893); Tolman, *Old Persian Inscriptions* (New York, 1893); *The Behistun Inscription of King Darius* (Nashville, 1908), with translation and critical notes; Justi, in *Grundriss der iranischen Philologie* (Strassburg, 1897); Strassmaier, "Inchriften von den Thontafeln des Britischen Museums copirt und autographirt," in *Babylonische Texte*, vols. x-xii (Leipzig, 1892-97). See ACHÆMENES; CAMBYSES; CYRUS, PERSIA.

DARIUS II, called, before his accession to the throne, Ochus, and after his succession *Nothus*, the Bastard. He was one of the 17 bastard sons of Artaxerxes I Longimanus. When Sogdianus, another of the bastards, had murdered the rightful King, Xerxes II, and assumed for himself the regal power, Ochus declared war against him, slew him, and secured the diadem for himself (424-423 B.C.). He now called himself Darius. His reign was ignoble. He showed himself to be completely under the control of his eunuchs and his cruel step-sister and spouse, Parysatis. Rebellions were constantly breaking out among his satraps, all of which, however, were crushed except that of Amyrtæus, Satrap of Egypt, who made himself independent in 414. It was during the life of Darius, and chiefly through the craft of Tissaphernes, Satrap of Asia Minor, and of his successor, Cyrus the Younger, son of the King, that the Persians exercised so great an influence over the affairs of Greece in the last years of the Peloponnesian War. Darius died 405-404 B.C.

DARIUS III, called before his accession *Codomannus*. A monarch noted for his mild disposition, handsome person, and courageous spirit. He was great-grandson of Darius II and was raised to the throne through the help of the eunuch Bagoas, after the murder of Artaxerxes III in 338 B.C. and of his son Arses in 336 B.C. But in spite of his superior qualities he could offer no solid opposition to the advance of the Macedonians. At the battle of Issus, in 333, his mother, wife, and three children fell into the hands of Alexander: the victory of Gaugamela, near Arbela (q.v.), in 331, opened to the latter the way to Susa and Persia proper. Darius now fled to Ecbatana, in Media, and, on the approach of his opponent, fled from there to the northern provinces, where he was seized by Bessus, Satrap of Bactria. Alexander, in a fit of generosity, hurried to deliver Darius. Bessus then prepared for flight; but Darius, refusing to follow, was stabbed by the barbarian and left. The scouts of Alexander's cavalry found Darius dying and administered to his last necessities. Thanking the Grecian King for his magnanimity and commending his family to his care, he expired (330). Alexander sent the dead body to Sisymbria, mother of Darius, to be interred in the tomb of the Persian kings. With him the Achaemenian line and the Persian Empire, that had so long dominated Asia, came to a close. Consult Justi, *Grundriss der iranischen Philologie* (Strassburg, 1897).

DARIUS THE MEDE. The son of Ahasuerus, and conqueror of Babylon, according to the biblical narrative of the Prophet Daniel (Dan. v. 31; vi. 28; ix. 1; xi. 1). His age is given as 62 years at the time of the taking of the city. There is great difficulty in identifying this ruler, whom Daniel speaks of as "Darius the son of Ahasuerus, of the seed of the Medes, which was made king over the realm of the Chaldeans" (Dan. ix. 1). Some scholars have suggested an identity with Cyaxares II (q.v.), or more likely with Gobyras, Governor of Gutium, who actually took the city of Babylon as chief in command for Cyrus. (See CYRUS THE GREAT.) But much uncertainty on the whole subject prevails. Some suggestions may be gained from Horner, *Daniel, Darius the Median, Cyrus the Great* (Pittsburgh, 1901).

DARJEELING, dār-jel'ing (Tib. *Dar-rgyas-glin*, land of the diamond thunderbolt, i.e., of the Lama's sceptre). A popular sanitary station of Bengal, British India, capital of a district of the same name, in the Sikkim Himalayas (Map: India, E 3). The average height of the town is 7200 feet above sea level, on the side of a great hollow or basin, in which flows the Rangit, a branch of the Tista. It is the summer residence of the Governor of the Bengal Presidency. It commands a magnificent view of the Himalayas to the north and west. The mean annual temperature is 54° F. Darjeeling has good bazars, a fine sanitarium, beautiful botanical gardens, two Anglican churches, an excellent water supply, and is, especially during October, the fashionable Indian health resort. It has a number of schools for Europeans. Tea growing is the principal industry of the district. One hundred and fifty thousand acres are devoted to its cultivation, and as much as 12,000,000 pounds has been produced annually. It was obtained by the British government from the Rajah of Sikkim in 1835, in order to be made a sanitary station. Pop., including the adjacent cantonment, 1911, 17,053; of district, 250,000.

DARK AGES. A name formerly applied either to the whole or the earlier part of the Middle Ages (q.v.).

DARK AND BLOODY GROUND, THE. A name given to the State of Kentucky as the scene of frequent Indian warfare in the days of the early settlers. The phrase has also been said to be a translation of the Indian word "Kentucky."

DARK DAY. Any day in which the sunlight appears to be remarkably dim or altogether absent. In New England the term is specifically applied to May 19, 1780, also known as Black Friday; but many similar dark days are also on record in other parts of the world. Other notable dark days in the United States were those of Oct. 21, 1716, and Oct. 19, 1762. Stygian darkness often prevails during eruptions of ashes from volcanoes. In recent years the months of August and September, 1881, were remarkable in the eastern part of the United States for a long series of days in which artificial light was oftentimes necessary at midday and business was generally very much interrupted. In this case the darkness is known to have been the result of a combination of ordinary cloudiness with the smoke from forest and prairie fires, and it is presumable that the same conditions must have obtained during the historical dark days of the previous century. The *United States Monthly Weather Review*, for September, 1881, p. 27, says: "The foggy or smoky condition of the atmosphere became quite general from the first to the tenth of this month over that portion of the United States between the meridians of 67° and 87° W. and the parallels of 40° and 45° N. It reached an unusual culmination in density in the eastern portion of the Middle Atlantic States and throughout New England, where it interrupted the prosecution of business and compelled the use of artificial light. The destructive violence of prairie and forest fires throughout northern Michigan and portions of Canada has perhaps never been exceeded, and the intensity of the accompanying smoke was simply dreadful. On September 6 southwesterly winds prevailed from Tennessee northward to Lake Superior, and thence eastward to the Canadian maritime provinces, and

smoke was reported as far south as Knoxville, westward to Milwaukee, northward to Rockliffe, Canada, and eastward to New Brunswick. To show the progress eastward of this condition in the atmosphere it is necessary to trace the movement of low-pressure areas over Canada and northern New England, and watch the accompanying change in wind directions." The darkness of the dark day of May, 1780, covered very much the same area, with southwest winds and occasional light rains, and was undoubtedly of the same nature, although in both cases it was attributed by the superstitious to supernatural causes. On the plains of Tibet, according to Marco Polo and other travelers, dark days are sometimes caused by clouds of dust so fine and light that it is carried to a great distance by the wind. Similar days of darkness have been caused by clouds of mingled vapor, smoke, and dust emanating from volcanic eruptions, although such clouds do not usually extend to the great distances reached by clouds of smoke from forest fires. Cases of such volcanic clouds occurred in connection with the eruption of Mont Pelée and La Soufrière in the West Indies in May, 1902, and Katmai, Alaska, in June, 1912.

DARKE, WILLIAM (1736-1801). An American soldier, born in Philadelphia, but taken by his parents to Virginia in 1740. He served under Braddock, rose to the rank of colonel in the American army during the Revolutionary War, and in 1791 commanded the left wing of St. Clair's army, which on November 4 was defeated by the Miami Indians. He was a member of the Virginia Legislature and of the Convention of 1788, in which he voted for the Federal Constitution.

DARK HORSE. A term familiarly used in the vocabulary of American politics and applied to a comparatively unknown man brought forth in a nominating convention at the supreme moment as a candidate for office in the place of a prominent rival candidate of his own party whose nomination would incur the risk of a divided vote. James K. Polk and Franklin Pierce were typical "dark horses" of the Democratic party, Rutherford B. Hayes and James A. Garfield of the Republican.

DARK LADY, THE. In Shakespeare's *Sonnets*, the woman thought by those who maintain that William Herbert is the dedicatee, to be Mary Fitton, one of Elizabeth's maids of honor. It is certain that Herbert and she created a scandal. Another suggestion, with fewer supporters, is Penelope Devereux, Lady Rich, the "Stella" of Sidney's sonnets. See also the theory advanced in the *Comtesse de Chambrun's The Sonnets of Wm. Shakespeare* (London and New York, 1913).

DARLSTON. A town in Staffordshire, England, 4 miles southeast of Wolverhampton. It has extensive mines of iron and coal and manufactures of hardware. Pop., 1901, 15,395; 1911, 17,107.

DARLEY, FELIX OCTAVIUS CARE (1822-88). An American painter in water color and illustrator. He was born in Philadelphia and was practically self-taught. He illustrated the works of Irving, Cooper, Longfellow, Hawthorne, Dickens, and Shakespeare, and made 500 drawings for Lossing's *History of the United States*. Among his lithographic illustrations are those for the *Legend of Sleepy Hollow*, *Rip Van Winkle*, and scenes in Indian life. The swing and vigor of his style, his facility and versa-

tility and the high average merit of his numerous works, make him one of the most noteworthy of American illustrators. In 1868 he published, after a visit to Europe, *Sketches Abroad with Pen and Pencil*. His water-color paintings of incidents in American history are full of spirit and his bank-note vignettes are also worthy of mention. Consult F. Weitenkamp, *American Graphic Art* (New York, 1912).

DARLEY, GEORGE (1795-1846). An English poet. He was born in Dublin in 1795, was graduated from Trinity College, Dublin, in 1820, and went to London, where he wrote critical papers for the magazines, and about 1830 joined the staff of the *Athenæum*, becoming famous for his caustic reviews. He died Nov. 23, 1846. Under the inspiration of the Elizabethans Darley produced several lyrical dramas containing passages of great beauty—*Sylvia*, or *the May Queen* (1827; 2d ed., 1892), and the inferior *Thomas à Becket* (1840) and *Ethelstan* (1841). As early as 1822 he had published *The Errors of Ecstasie*, a melodious poem in blank verse, followed by *Lilian of the Vale* (1826), a thrilling tale, and his best poem, *Nepenthe* (1835; republished in 1897). In 1840 he edited the works of Beaumont and Fletcher. He also wrote several treatises on mathematics, which were praised by Carlyle. For specimens of his verse, consult: Stedman, *Victorian Anthology* (New York, 1895); Stratfield, *Selections from the Poems of George Darley* (1904); also the edition of Colles in the *Muses' Library* (1906).

DARLING. A mountain range of Western Australia, extending north and south for about 250 miles, parallel with the coast and from 20 to 70 miles distant (Map: Western Australia, B 9). It ends near Point d'Entrecasteaux. Its highest summit reaches 3500 feet.

DARLING, GRACE HORSLEY (1815-42). An English heroine. She was born in Bamfborough, Northumberland, the daughter of William Darling, lighthouse keeper on Longstone, one of the Farne Islands. On the morning of Sept. 7, 1838, the steamer *Forfarshire* was wrecked near the lighthouse, and all but nine of the 63 passengers perished. In spite of the danger of such an undertaking the father and daughter made a trip to where the survivors lay and rescued four men and a woman in the first trip, and William Darling and two of the rescued men returned and brought off the four others. News of the exploit was received with great enthusiasm by the English people, and by popular subscription the sum of £750 was raised for the heroine and £270 for the father. Both father and daughter were rewarded with gold medals. Consult *Grace Darling: Her True Story, from Unpublished Papers in the Possession of the Family* (1880), and *Mable, Heroine that Every Child Should Know* (New York, 1908).

DARLING RIVER (named in honor of Sir Ralph Darling, Governor of New South Wales, 1825-31), or **BARLOW RIVER.** An Australian stream, the most important tributary of the Murray (Map: New South Wales, B 2). It rises in southeastern Queensland, flows through New South Wales, and joins the Murray on the Victorian border, its length being 1160 miles. The area of its basin is about 200,000 square miles. During the dry season its course is marked by a succession of pools or small lakes; but during the winter, when it is subject to sudden floods, it is navigable by light-draft steamers for over 600 miles to Bourke, the ter-

minus of the Great Western Railway, from Sydney. Most of the region of the Darling is but a desert in the dry season.

DARLINGTON. A parliamentary and municipal borough and market town in Durham Co., England, on the Skerne, near its junction with the Tees, 8 miles south of Durham City (Map: England, E 2). The town is laid out in wide and regular streets and has a spacious market place. The parish church of St. Cuthbert, a handsome Early English edifice, was founded about 1160 by Bishop Pudsey. It is built in the form of a cross. It received its charter of incorporation in 1867, has owned its gas and water works since 1854, and maintains public baths and markets. Its principal manufactures are iron, worsteds, carpets, bricks, stone, bridge material, gun castings, and shells, and there are extensive locomotive works belonging to the Northeastern Railway. The first passenger railway in England operated by steam was opened in 1825 between Darlington and Stockton. Pop., 1891, 38,000; 1901, 44,511; 1911, 55,631. At Oxen-le-field, 3 miles from Darlington, are curious cavities of unknown origin, called Hell Kettles. From Anglo-Saxon times till 1867 Darlington was under the authority of the Bishop of Durham. Consult Longstaffe, *History and Antiquities of Darlington* (London, 1854).

DARLINGTON. A town and the county seat of Darlington Co., S. C., 70 miles (direct) east-northeast of Columbia, on the Atlantic Coast Line and the South Carolina Western railroads (Map: South Carolina, E 2). It carries on a considerable trade in cotton, tobacco, and grain, the principal products of the surrounding agricultural region, and manufactures cottonseed oil, cotton goods, and fertilizers. Pop., 1900, 3028; 1910, 3789.

DARLINGTON, JAMES HENRY (1836-). An American bishop, born in Brooklyn, N. Y. He was educated at New York and Princeton universities and at Princeton Theological Seminary. In 1882 he was ordained a priest in the Protestant Episcopal church. Thereafter he was assistant (1882-83) and rector (1883-1905) of Christ Church, Brooklyn, and archdeacon of Brooklyn (1896-98); and in 1905 he was elected first Bishop of HARRISBURG. In 1902-03 he lectured at New York University and in 1910-11 he served as chaplain of the Masonic Grand Lodge of Pennsylvania. He edited *The Hymnal of the Church* and wrote *Pastor and People* (1902).

DARLINGTON, WILLIAM (1782-1863). An American botanist, born at Birmingham, Pa. In 1806 he went to India, and on returning published an account of his voyage. He was a member of Congress in 1815-17 and again in 1819-23. At Westchester, Pa., he founded an atheneum, an academy, and a society of natural history. Among his publications are: *Mutual Influence of Habits and Disease* (1804); *Agricultural Chemistry*; *Agricultural Botany* (1847); *Memorial of John Bartram* (1849). The California pitcher plant was named *Darlingtonia californica* for him.

DARMESTER, AGNES MARY FRANCES. See ROBINSON, AGNES MARY FRANCES.

DARMESTER, dārm'ste-tār', JAMES (1848-94). A French Orientalist, whose eminence was achieved especially in the field of Iranian scholarship. He was born, of Jewish parentage, at Chateau-Salins, in Lorraine. He was educated at the Lycée Bonaparte, Paris, from which he grad-

uated with the highest honors in 1867, when he began to devote himself to Oriental philology, chiefly under the guidance of the gifted Michel Bréal. In 1877 he was appointed assistant professor of Zend at the École des Hautes Etudes and in 1885 was advanced to the professorship of Iranian languages and literature at the Collège de France. In 1886 he visited India, to make special philological researches in connection with the sacred books of the Parsis, and was afterward honored by an appointment as fellow of Bombay University. After the death of Renan he became secretary of the Société Asiatique de Paris and was likewise busily engaged as an editor of a leading political and literary periodical, *La Revue de Paris*, during the last years of his life. His writings in the field of Avestan philology and Zoroastrianism are of prime importance, even if his theories, which are often very radical, cannot always be accepted. Among his works may be mentioned: *Haurvatât et Ameretât, Essai sur la mythologie de l'Avesta* (1875); *Ormazd et Ahriman, leurs origines et leur histoire* (1877); *Études iraniennes* (2 vols., 1883); *Essais orientaux* (1883); *Chants populaires des Afghans* (1888-90); *Les prophètes d'Israël* (1892); and his most important work, *Le Zend-Avesta; Traduction nouvelle* (3 vols., 1892-93). Besides his Oriental work, he wrote a volume of *Essais de littérature anglaise* (1883), and a volume on Shakespeare (1889) for the *Collection des Classiques populaires*. A number of his literary essays have been translated into English by Helen Jastrow (Boston, 1895) and by his wife (London, 1896). Consult Bréal, "James Darmesteter," in the *Annuaire de l'école des hautes études* (Paris, 1895).

DARMSTADT, därm'stât (Ger., city of the Darm, the river near which the city lies). The capital of the Grand Duchy of Hesse (and of Starkenburg Province), Germany, and residence of the Grand Duke, about midway between the Rhine and the Main, at the northwestern extremity of the Odenwald, and 17 miles south of Frankfurt-on-the-Main (Map: Germany, C 4). It consists of an old and new town, the streets of the former being narrow and crooked, but those of the latter broad and handsome, exhibiting many imposing specimens of architecture. Its principal square, the Luisenplatz, adorned with a lofty column, surmounted by a bronze statue of Grand Duke Louis I, who founded the new town, contains the post office, the government building, and the old palace. The Luisenplatz is crossed by the Rheinstrasse, the most important street in Darmstadt. The grand-ducal palace, surrounded by pleasant gardens, was begun in the fifteenth century, but practically rebuilt in the early part of the eighteenth. It contains a valuable library of over 564,000 volumes, an archaeological collection, and a picture gallery with some good examples of the early German and Dutch masters. The chef-d'œuvre is the "Madonna of the Burgo-master Meyer," by Holbein the Younger. Prominent among numerous churches are the Stadtkirche, with the handsome monument of Landgrave George I, and the Roman Catholic church built after the Pantheon at Rome, with a lofty dome supported by 28 columns. Other notable features include the new palace, the palace of Prince Henry, the old and new town halls, theatre, and the Herrngarten, a fine public garden and park. The town's affairs are administered by a municipal council of 42, and an exec-

utive board of 3 members. It owns its water supply and operates gas works and an electric-light plant. Its educational institutions include a technical high school (1392 students in 1913), two gymnasia, an artisans' school, and a school of agriculture. Among its charitable institutions are a municipal hospital and the Alice and provincial hospitals.

Darmstadt is a manufacturing town of growing importance. The chief articles of manufacture are machinery, carpets, hats, tobacco, chemicals, scientific instruments, playing cards, and beer. Darmstadt is an important railway centre. An electric street railway accommodates internal traffic. The famous chemist Justus von Liebig was a native of the town, and the composer Flotow died here. To the east of the town is the palace of Rosenhöhe, with the grand-ducal mausoleum, containing the tombs of the Grand Duke Louis IV and his wife, Princess Alice, daughter of Queen Victoria of England. Pop., 1890, 56,000; 1900, 72,381; 1910, 87,089.

Darmstadt appears as Darmundstadt in the eleventh century. It acquired municipal rights in 1330 and became in 1567 the capital of Hesse-Darmstadt. It was burned by the French in 1688 and 1693, but attained great prosperity towards the end of the eighteenth century. Consult Zernin and Wörner, *Darmstadt und seine Umgebung* (Zurich, 1890).

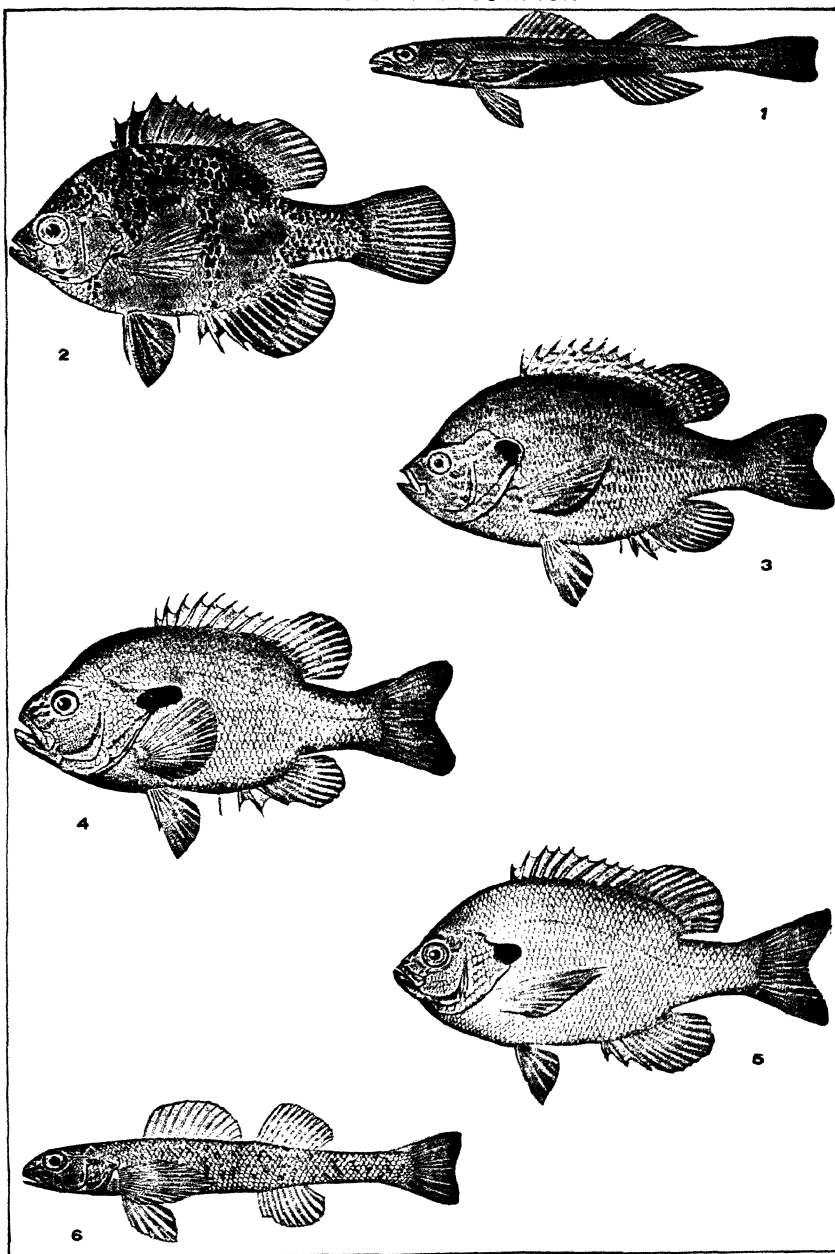
DAR/NEL (Fr. dial. *darnelle*; probably from OF. *darne*, stupid, Dan. *daare*, fool, so called from its supposed stupefying power), *Lolium temulentum*. A grass of the same genus with the valuable rye grass (q.v.), an annual, common in grain fields in England and in many parts of continental Europe, and introduced in some parts of the United States. This grass has from ancient times been reputed to have a narcotic, poisonous seed, to which many bad effects were ascribed. Lindley, in his *Medical and Economical Botany*, published in 1849, ascribes narcotic and acrid qualities to darnel seed. Recent investigations have shown the presence of a fungus in the grain of this grass, and to it the poisonous qualities are attributed. The fungus seems to be almost always present in the seed of this species and less frequent in the other species of the genus.

DAR/NELL, HENRY FAULKNER (1831-). An English Protestant Episcopal clergyman, born in London and educated at Dublin and Cambridge. He was principal of Hellmuth Ladies' College at London, Ontario, in 1874-83, and rector of a church at Avon, N. Y., in 1883-1904, and of St. Mary's, Detroit, in 1904-07. His publications include: *Philip Haelebrook* (1887); *The Craze of Christian Englehart* (1890); *Songs of the Season* (1895).

DARNÉTAI, dâr'nâ'tâl'. The capital of a canton in the Department of Seine-Inférieure, France, at the confluence of the Aubette and Robec, a suburb of Rouen (Map: France, N., G 3). Its noteworthy buildings are the Gothic church of Long-Paon, a fine early sixteenth-century belfry, and the town hall. The town commands a good view of Rouen. It has important manufactures of woollens, calico, cotton goods, and cast iron. Pop., 1901, 6826; 1911, 7218.

DARNING NEEDLE. A dragon fly, or damselfly; supposed by ignorant folk to be attempting to pierce and "sew up" one's ears or do other mischief as it darts about one's head; hence the term is frequently extended to "devil's darning needle." See DRAGON FLY.

DARTERS AND SUNFISH



1. SAND DARTER (*Ammocrypta pellucida*).
2. BLACK-BANDED SUNFISH (*Mesogonistus chaetodon*).
3. COMMON SUNFISH OR PUMPKIN-SEED (*Lepomis gibbosus*).

4. YELLOW-BELLIED SUNFISH (*Lepomis auritus*).
5. BLUE OR COPPER-NOSED SUNFISH (*Lepomis palidus*).
6. JOHNNY DARTER (*Boleosoma nigrum*).

DARNLEY, HENRY STEWART, or STUART, LORD (1545-67). The second husband of Mary, Queen of Scots. The second but eldest surviving son of the Earl of Lennox by Lady Margaret Douglas, niece of Henry VIII, he was born, Dec. 7, 1545, at Temple Newsam, Yorkshire, where he received a private education. He was handsome and of accomplished manners, but destitute of moral and intellectual power. He married Mary on July 29, 1565, but soon disgusted her by intemperance, profligacy, and insolence. As an accessory to the assassination of Rizzio, he intensified Mary's hatred by holding her while the deed was committed in her presence. While recovering from an illness, he met his death in an isolated house which was blown up by the Earl of Bothwell, Feb. 9, 1567. The question of Mary's complicity in the deed will probably always remain one of the problems of history. See MARY STUART.

D'ARREST, dār-rést', HEINRICH LUDWIG (1822 or 1823-75). A German astronomer. He was born in Berlin and studied astronomy there under Encke. He was subsequently connected with the observatories of Berlin and Leipzig and became in 1852 professor in the Leipzig University. In 1857 he became professor of astronomy in Copenhagen, where he died. His important publications include: *Resultate aus Beobachtungen der Nebelflecke und Sternhaufen* (1857); *Siderum Nebulosorum Observationes Harmsenses* (1867); *Untersuchungen über die nebulösen Sterne in Bezug auf ihre spektral-analytischen Eigenschaften* (1872); and numerous astronomical papers in scientific journals. His original observations include discoveries of several comets, and of the planet Freia (1862).

DART. See DACE.

DARTER (so called from the quick motion). One of a group of small fresh-water fishes of the perch family, peculiar to the United States. None is more than 10 inches in length, and the least is only 1½ inches long—the smallest spiny-rayed fish known. All are powerful swimmers and have been spoken of by Forbes as concentrated rather than dwarfed fishes. "They have developed," he says, "an activity and hardihood, a vigor of life, and a glow of high color almost unknown among brook fishes elsewhere." They have been the subject of special study by Dr. D. S. Jordan, who tells us that most of them prefer clear running water, where they lie on the bottom concealed under stones, darting, when frightened or hungry, with great velocity for a short distance, then stopping as suddenly. All are carnivorous and feed chiefly on the larvæ of flies. These beautiful and very interesting little fishes exist in great variety throughout the central and southern United States and are universally known to country boys as "Johnny darters," a name particularly given to a typical species (*Boleosoma nigrum*). A few others of the larger ones have received other names locally, as the sand darter (*Ammocrypta pellucida*), indicating the preference of its genus for sandy bottoms. This fish is very transparent and, when disturbed, plunges into the sand. (See Plate of DARTERS AND SUNFISH.) Excellent popular accounts will be found in the *American Naturalist* for 1876 and 1880; and a full history of the group in Jordan and Evermann's *Fishes of North America*, pp. 1016-1105 (Washington, 1896).

DARTER, or SNAKE BIRD. A name given to certain steganopode birds, nearly allied to cor-

morants, but having a bill longer than the head, perfectly straight, slender, and sharp-pointed; and also remarkable for the great length of the neck, which has obtained for them the name "snake birds." They generally live in pairs near bodies of fresh water. If alarmed while sitting on a branch over a stream or by the edge of a lake, they drop off quietly into the water, sink gently beneath the surface, and disappear; or they may fly upward and circle about like a hawk. They make rude nests upon trees and lay chalky-blue eggs. They eat great quantities of fish, which they kill by a quick, snakelike darting forward of the closed beak, impaling the prey, which is then flung into the



BEAK OF THE DARTER.

air, caught in the mouth, and swallowed entire. Four species are known, constituting the family Anhingidae. One species occurs in Africa, one in southern Asia, one in Australia, and one in tropical and subtropical America. The last (*Anhinga anhinga*) is sometimes called the water turkey and wanders in summer as far north as southern Illinois. It is a handsome bird, about 3 feet long, glossy black, the back marked with numerous silvery-white spots or streaks. See Plate of FISHING BIRDS, and Colored Plate of EGGS OF WATER AND GAME BIRDS.

DARTFORD (AS. *Darentford*). A town in Kent, England, 14 miles east-southeast of London Bridge, on the Darent, about 3 miles from its junction with the Thames (Map: London and Vicinity, F 11). It lies in a narrow valley between two steep hills. It has large powder and paper mills, also manufactures of oil, iron, machinery, and chemicals. One of the first paper mills in England was built here by Spielman, jeweler to Queen Elizabeth in 1590. The City of London Lunatic Asylum is situated here, and there are interesting ruins of a nunnery, founded 1355 by Edward III. Wat Tyler's insurrection, in the reign of Richard II, broke out at Dartford in 1381. Pop., 1891, 12,000; 1901, 18,600; 1911, 39,909.

DARTMOOR (named from the river Dart, which rises in the region). A granitic tableland in the southwest of Devonshire, England, remarkable for its wild, rugged scenery and cyclopean relics of aboriginal inhabitants (Map: England, C 6). Dartmoor proper (or the ancient forest of that name) and the outlying common lands are about 20 miles square. This moorland region, encircled by a natural rampart and moated by deep valleys, has a considerable elevation above the surrounding country and culminates in Yes Tor, 2077 feet above sea level. Copper is found, and at Wheal, Duchy, and Birch Tor are productive tin mines. The largest kaolin works in England are at Lee Moor, which is also the seat of a meteorological observatory. The soil is composed chiefly of peat, which in the bottoms has accumulated in some places to the depth of 25 feet, and it rests on a subsoil of fine sand. Many of the well-watered dells and ravines are fertile, while the whole moor affords pasturage for cattle, sheep,

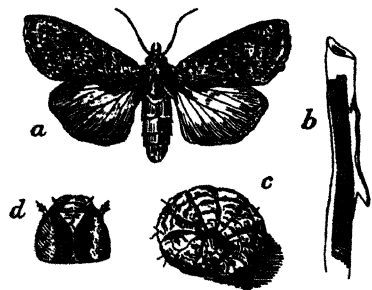
and horses. The antiquities include the Gray Wethers, a fine specimen below Sittaford Tor of what is now styled a Druidical temple, the vestiges of a large aboriginal village at Grims-pound, the cromlech at Drewsteigton, logans, stone avenues, dolmens, barrows, cairns, rock pillars, and ancient trackways.

During the long war with Napoleon a prison, now used for convicts, was erected in western Dartmoor for French captives. Prince Thwing sprang up close by and soon became a thriving place. During the war with the United States (1812-15) many captured Americans were confined at Dartmoor. See DARTMOOR MASSACRE.

The castle, manor, and forest of Dartmoor were granted by Henry III to his brother Richard, Earl of Cornwall, and since 1337 Dartmoor has been, in part, permanently annexed to the Duchy of Cornwall. Dartmoor figures conspicuously in poetry and romance. Consult Rowe, *A Perambulation of the Ancient and Royal Forest of Dartmoor*, etc. (Plymouth and London, 3d ed., 1806), and S. Baring Gould, *Book of Dartmoor* (London, 1900).

DARTMOOR MASSACRE. THE. The killing (April 6, 1815) by a company of English soldiers of some American prisoners, who, together with 6000 others, had been confined in the Dartmoor (England) prison for several months after the close of the War of 1812 between England and the United States. To quell what they regarded as a mutiny and to thwart an apparent effort at escape, the prison guard, probably under orders from Capt. T. G. Shortland, their commanding officer, fired upon the prisoners, killing seven and wounding about 60—30 of them dangerously. The Americans at the time regarded this as an act of wanton murder, but it was pronounced justifiable by a joint commission, which, however, acquitted the prisoners of the charge of organizing a mutiny or of planning an escape. The British government soon afterward promoted Shortland, but made liberal provision for the families of those who had been killed or permanently disabled. Consult Andrews, *The Prisoners' Memoirs: or, Dartmoor Prison* (New York, 1852), and Cobb, *A Green Hand's First Cruise, Together with Five Months in Dartmoor* (Boston, 1841).

DARTMOOR PRISON. See DARTMOOR, and DARTMOOR MASSACRE.



A DART MOTH (*Agrotis saucia*).

a, Adult moth; b, deposit of eggs; c, caterpillar (a cutworm); d, head of caterpillar.

DART MOTH. A noctuid moth of the genus *Agrotis*, whose caterpillars are cutworms, sometimes called "climbing cutworms." A species

very widespread in both Europe and America is *Agrotis saucia*, whose wings expand 1½ inches. The fore wings are grayish brown variegated with black; the hind wings whitish, deepening into brownish towards the margin. The caterpillar is nearly 2 inches long when mature and is of a dull flesh color mottled with brown and black. When ready to pupate, it descends and forms a smooth cavity in the ground for that purpose. These caterpillars feed on the leaves of fruit-bearing trees and shrubs.

DARTMOUTH, därt'müth. A town of Halifax Co., Nova Scotia, Canada, situated on Halifax harbor, opposite the city of Halifax, of which it is practically a suburb connected by a 15-minute service of ferries (Map: Nova Scotia, F 4). It is the terminus for the Halifax and Eastern Railway. It contains handsome residences, the provincial asylum for lunatics, and a park. The manufactured products include sugar, lumber, spice, soap, chocolate, cordage, corn meal, beer, skates, and bolts. There are also boiler works, rolling mills, and a marine railway. Dartmouth, founded in 1749, was destroyed by Indians in 1751. Fort Clarence, below the town, commands the narrow and dangerous eastern passage, which was considered impassable for large vessels until 1862, when the Confederate steamer *Tallahassee* escaped through it. Pop., 1901, 4806; 1911, 5058.

DARTMOUTH. A town and seaport of Devonshire, England, built in terraces on a steep slope 300 to 400 feet high on the river Dart, 27 miles east of Plymouth, and not far from the sea (Map: England, C 6). The streets are narrow, and many of the houses have the old-style overhanging stories, projecting gables, and wood carvings. In St. Saviour's Church, of the fourteenth century, are a richly sculptured stone pulpit, a highly ornamented, painted, and gilt interior, a carved rood loft, and interesting monuments. A battery and the remains of a castle built during the reign of Henry VII stand at the entrance to the excellent harbor. In the river above the town is anchored the cadet training ship *Britannia*. The commerce and shipping trade of Dartmouth are of considerable importance. Its fisheries are extensive, it is a coaling station for the south coast, and has shipyards, paint factories, breweries, and engineering works. It has a resident United States consular agent. Pop., 1901, 6579; 1911, 7005. Sir Humphrey Gilbert, the Newfoundland explorer, was born near the town. At Dartmouth, in 1190, the Crusaders, under Richard Cœur de Lion, embarked for the Holy Land. Its earliest-known charter dates from 1342. The French burned the town in the time of Richard II, but were repulsed in another attack on it in 1404. In the Civil War of the seventeenth century it was captured by the Royalists under Prince Maurice and retaken by the Parliamentarians under Fairfax.

DARTMOUTH. A town in Bristol Co., Mass., about 5 miles south of New Bedford, on the Paskamansett River (Map: Massachusetts, F 6). It is in a region of summer resorts and contains three public libraries. There are poultry and dairying interests and manufactories of box boards. Pop., 1900, 3669; 1910, 4378.

DARTMOUTH COLLEGE. An institution for higher education situated at Hanover, N. H. Dartmouth originated in Moor's Indian Charity School, organized about 1750 at Lebanon, Conn., by the Rev. Eleazar Wheelock, and receiving

its name and first endowment from Joshua Moor, or More, in 1755. Support for the school came from gifts made chiefly by the general courts of Massachusetts Bay and New Hampshire and by persons in England interested in the project of educating the Indians. This interest was fostered by Sampson Oocom, an Indian preacher and pupil of Dr. Wheelock, who toured England and Scotland in 1766-67, raising funds for the school. The proceeds, some £10,000, were intrusted to a board of trustees, of whom the Earl of Dartmouth was chairman. Encouraged by this success, plans were made for the enlargement of the school, so that both whites and Indians might be taught, and for placing it upon a legal and permanent basis. Largely through the influence of John Wentworth, Governor of New Hampshire, large tracts of land were given by that province on the present site of the college, and in 1769 George III granted a royal charter to "Dartmouth College"—named in honor of its patron, the Earl. At the same time Moor's School was made a separate institution, though under the control of the same trustees as those of the college. This school was maintained until 1849 and still retains a legal if fictional existence under the title "The President of Moor's Charity School." Dr. Wheelock was made the first president of the college and retained office until 1779, when he was succeeded by his son John. In 1816, a religious controversy having arisen, the Legislature of New Hampshire passed acts intended to deprive the trustees of authority and to take to itself the control of the institution. These acts were sustained by the State court, but were, in 1819, upon argument by Daniel Webster (q.v.), invalidated by the Supreme Court of the United States, which declared the original charter to constitute an inviolable private trust. (See DARTMOUTH COLLEGE CASE.) Dartmouth comprises the College; the Medical School, founded in 1798; the Thayer School of Civil Engineering, founded in 1867; and the Amos Tuck School of Administration and Finance, founded in 1900. The Chandler School of Arts and Sciences, founded in 1851, was merged into the college in 1893 as the Chandler Scientific Course. In 1866 the New Hampshire College of Agriculture and Mechanic Arts was established by the State in connection with Dartmouth, but was separated from the college in 1893 and moved to Durham, N. H. The course of the Medical School was reduced in 1913 to two years of preparatory medical work in conjunction with undergraduate courses leading to the bachelor's degree. Dartmouth thus offers no degree in medicine, but makes possible a ready transition from college to advanced standing in metropolitan professional schools which offer unusual clinical facilities. The courses of the Thayer and Amos Tuck schools are two years; but the first year in any of the graduate schools may, under certain restrictions, be credited also as the last year in the undergraduate school.

Degrees are conferred in arts, science, civil engineering, and commercial science. The college buildings, numbering some 40, include laboratories, an observatory, two medical buildings, dormitories, a large dining hall, and commons. There is, besides, the Mary Hitchcock Memorial Hospital, having lecture and clinic facilities at the disposal of the Medical School. The library represents the accumulations of a century and

a quarter and consists of over 125,000 volumes and 20,000 pamphlets. The student enrollment in 1913 was 1320, of whom 21 were in the Medical School, 37 in the Thayer School, and 64 in the Amos Tuck School. The presidents of the college have been: Eleazer Wheelock, 1769-79; John Wheelock, 1779-1815; Francis Brown, 1815-20; Daniel Dana, 1820-21; Bennett Tyler, 1821-28; Nathan Lord, 1828-63; Asa Dodge Smith, 1863-77; Samuel Colcord Bartlett, 1877-92; William Jewett Tucker, 1893-1909; Ernest Fox Nichols, 1909-.

DARTMOUTH COLLEGE CASE. One of the most important and far-reaching decisions in constitutional law ever decided by the United States Supreme Court. The charter of Dartmouth College was granted by the British crown in 1769, incorporating 12 persons by the name of the Trustees of Dartmouth College, and giving them full power to govern the college and to fill all vacancies in their body. In 1816 the Legislature of New Hampshire passed an act amending the original charter, providing for the appointment of 11 new trustees by the Governor of the State, and for a board of overseers to inspect and control the conduct of the trustees. The old trustees refused to accept the amended charter, and brought suit against the officers of the new board who had obtained possession of the college property. The Supreme Court of New Hampshire upheld the constitutionality of the statute, and the case was then taken on writ of error to the Supreme Court of the United States. For the plaintiffs the main argument was made by Daniel Webster (q.v.), and for the defendants by William Wirt (q.v.), Attorney-General of the United States. In its decision, handed down in 1819, and in which all but one of the justices concurred, the court held, through Chief Justice Marshall, that the acts of the New Hampshire Legislature in question were unconstitutional and void. The college was declared to be a private and not a public corporation; the charter of such a corporation was declared to be a contract between the crown (to whose obligations the State of New Hampshire had succeeded) and the corporators and their successors, and the State statute which attempted to change the charter without the consent of the corporation was held to be within the prohibition of the Federal Constitution, that "no State shall . . . pass any . . . law impairing the obligation of contracts." The consequences of this decision have been very far-reaching, both in securing the inviolability of private trusts and in limiting State sovereignty and extending, through the Federal courts, the authority of the Federal Constitution. The principles of the decision have been repeatedly applied, and in some important respects limited, both by Federal and State courts. The case is reported in 1 *New Hampshire Reports*, 111, and 4 *Wheaton (United States) Reports*, 518. For favorable comments on the decision, consult: Kent, *Commentaries on American Law*, vol. i (Boston, 1884), Lect. xix; Story, *Commentaries on the Constitution of the United States*, vol. ii (ib., 1891); Pomeroy, *Introduction to the Constitutional Law of the United States* (9th ed., Boston, 1886); Maine, *Popular Government* (London, 1885). For a searching criticism of the case, consult Shirley, *The Dartmouth College Causes* (St. Louis, 1879), and Walker, *The Dartmouth College Case*.

DARTON, NELSON HORATIO (1865-).

An American geologist, born in Brooklyn, N. Y., and educated in the public schools. He was a chemist for four years and in 1886 became geologist to the United States Geological Survey, from which in 1910 he was transferred to the post of geologist to the Bureau of Mines of the Geological Survey. His studies in water analysis when he was a young chemist led to the condemnation of many insanitary wells, and much of his later work was in government reports on artesian waters and structural materials. He edited the Survey's first bibliography of North American geology, from 1792 to 1891, in *Survey Bulletin* 127 (1896).

DARU, dâ'ru', PIERRE ANTOINE NOËL BRUNO (1767-1829). A French historian, poet, and statesman, born at Montpellier, Jan. 12, 1767. He entered the army in 1783, was imprisoned (1792-93) on a charge of treason to the Republic for 18 months, during which he produced a creditable translation of Horace. One of Napoleon's most trusted lieutenants, owing to his undisputed probity and signal administrative qualities, he held some of the most exalted positions in the Empire, such as Councillor of State, intendant général de la maison militaire, Secretary of State, and Minister of War. He was in charge of the Commissary Department of the Grand Army during the campaign of 1812 and also during the retreat through Russia. During the Restoration he was made intendant général by Louis XVIII in 1814. At the second Restoration he retired for a time (1815-19) to private life and study, but was made member of the Chamber of Peers in 1819 and became a distinguished defender of constitutional liberty. He wrote some important pamphlets on free speech and even defended the educational theories of Rousseau. In spite of his military and political activity, his literary production was of such excellence that he was elected to the Académie Française and later named its president. He died on his estate, near Meulan, Sept. 5, 1829. His *Histoire de la république de Venise* and *Histoire des ducs de Bretagne* (1826) are impartial, erudite, and accurate. Sainte-Beuve devotes three articles to him in the *Causeries* (vol. ix). A *Life* by Viennet is prefixed to the fourth edition of *Histoire de la république de Venise* (Paris, 1853).

D'ARUSMONT, dâ'rus'môn', FRANCES. See WRIGHT, FANNY.

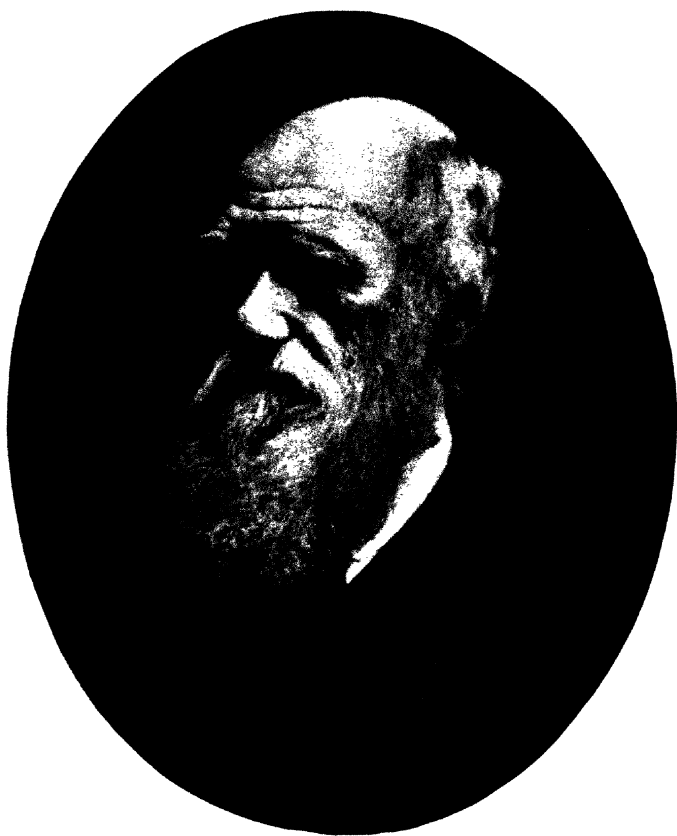
DAR'WEN. A town of Lancashire, England, on the river Darwen, situated amid moorland hills, 3½ miles south of Blackburn and 18 miles northwest of Manchester (Map: England, D 3). The town is irregularly built and unattractive. It owes its importance to a trade with India and China in calicoes, for which it employs a large number of spindles and looms. The India Mill, one of the finest in the country, covers an area of 31,000 square feet and runs 160,000 spindles. The town also contains paper-staining works, paper manufactories, calico-printing establishments, works for the manufacture of fire bricks, stained paper, tiles, and sanitary tubes, iron and brass founding, bleaching, machine and reed making. Coal mines and stone quarries also find employment for a considerable number of the inhabitants. It has numerous places of worship, large and commodious schools for elementary education, technical schools, and a co-operative public hall. The municipality owns gas, water, electric light supply, tramways, slaughterhouses, markets, public baths, free li-

brary, technical school, cemetery, artisans' dwellings, and lodging house, and a modern system of sewage disposal for fertilizing purposes. The place was known as Over Darwen from the reign of Henry II and with several hamlets was incorporated in 1878 as the municipal borough of Darwen. Pop., 1851, 11,702; 1891, 34,192; 1901, 38,212; 1911, 40,344. Consult Shaw, *History of Darwen* (London, 1891).

DAR'WIN, CHARLES ROBERT (1809-82). The greatest English naturalist of the nineteenth century. He was born at Shrewsbury, Feb. 12, 1809, the son of Dr. Robert W. Darwin, F.R.S., and grandson of Erasmus Darwin (q.v.). His mother was a daughter of Josiah Wedgwood, the famous manufacturer of pottery. After attending a public school at Shrewsbury for some years, he studied at Edinburgh University for two sessions, and then at Christ's College, Cambridge, where he took his degree of B.A. in 1831. His father had originally intended him for the Church, but hereditary tendencies towards natural history led him in another direction. Shortly after graduation he seized an opportunity to go around the world as naturalist in H. M. S. *Beagle*, commanded by Captain Fitzroy, R.N. This expedition which continued from Dec. 27, 1831, to Oct. 2, 1836, and spent much time in making surveys of southern South America, afforded Darwin a great opportunity for making original observations and for contemplation. It was, indeed, his studies on the fauna of the Galapagos Islands that planted the germ of his evolutionary theories. The account of his voyage, finally (1860) entitled *Voyage of a Naturalist on H. M. S. Beagle*, which has passed through many editions, is a classic work and shows a degree of intelligence in the author that promised great things for his future. This voyage had a marked effect on Darwin's health, leaving him with a tendency towards nausea which during life permitted of only a limited amount of work each day. In the seclusion of his country place at Down the great thinker was able by steady application, despite his disability, to produce his great works.

The scientific outcome of his voyage was a series of important books. In 1839 was published his first *Journal of Researches*; in 1840-43 the *Zoology of the Voyage of H. M. S. Beagle*, published by the government and edited by Darwin; in 1842, *The Structure and Distribution of Coral Reefs*, in which was proposed the theory of the origin of coral reefs that is most generally held to-day; in 1844, *Geological Observations on Volcanic Islands*; and in 1846, his *Geological Observations on South America*. Darwin's valuable *Monograph of the Cirripedia* (1851-55) was the immediate outcome of his voyage and remains to-day the standard systematic work on this group.

It had long been known to a number of scientific friends that Darwin was working on a theory of evolution when, in 1858, he received from A. R. Wallace, then in the East Indies, the manuscript of a paper containing precisely the same explanation of adaptation that Darwin had hit upon. Darwin was naturally much embarrassed, but seemed willing to throw aside the work of years and give precedence to his friend's paper. On the advice of friends, however, his paper and Wallace's were read at the same meeting of the Linnean Society of London and were published in their *Transactions* for 1858. In



Ch. Darwin

1859 Darwin's book, *The Origin of Species by Means of Natural Selection, or the Preservation of Favored Races in the Struggle for Life*, appeared. It at once created the greatest interest, and, largely through the extraordinarily able championship of Huxley, its ideas soon gained widespread acceptance. Although Darwin's theory of natural selection is primarily only an explanation of adaptation, yet adaptation is of such fundamental importance that its explanation paved the way for the acceptance of the general theory of evolution; for Darwin contributed a mechanical or natural explanation of what had before required a supernatural explanation. Development by natural law took the place of the special-creation hypothesis. Darwin's mechanical theory is that of the struggle for existence, the annihilation of the unfit, and the consequent "survival of the fittest." It rests upon the evident fact that every species of animal produces more young than will develop to maturity and breed; for if all the young produced by any species bred the world would soon become filled with that species to the exclusion of every other. The vast number of individuals that are killed off are, on the whole, below the average of those that survive. The latter have been preserved on account of a certain, perhaps slightly, greater fitness to their environment, which may protect them from their enemies or give them greater power in gaining food or reproducing their kind. Their slight advantage will be inherited, and so the next generation will start from a fitter plane, and, by a continuance of the selective process in successive generations, perfect adaptation will result. The theory of natural selection has been subjected to the most rigorous criticism, but it still remains a useful explanation of certain phenomena. See NATURAL SELECTION; EVOLUTION

The importance of the change wrought by Darwin's book cannot be overestimated. First, it revolutionized the method of work and the aims of natural history. The aims of zoological investigation were thenceforth the retracing of zoological history, determining the stages through which plants and animals have passed in their development. Before Darwin's time systematic work was the mere enumeration of species; since, it has been the study of relationships. Before Darwin embryology was the description of the earlier stages of development; since, it has been the reading of the phylogeny in ontogeny. Before Darwin comparative anatomy was the comparison of types; since then it has become the study of the effect of function and environment in molding the bodily form.

But the influence of Darwinism was by no means confined to natural history. Darwin himself early extended his general theory to man, especially in *The Descent of Man and Selection in Relation to Sex* (1871). Thus extended, Darwin's theory came into opposition to the Bible, literally and narrowly interpreted, and so it aroused a vast storm of opposition from Church officials. In fullness of time not only ecclesiastics but philosophers of every sort have come to base their teachings and doctrines on evolution. Darwin taught that the mind of man in its lowest stages was essentially an animal mind, and the upward progress of man is viewed as effected by natural causes, chief among which is the action of natural selection. He does not inquire into the exact way in which the mental

and bodily are connected. He simply assumes that, just as the bodily organism is capable of varying in an indefinite number of ways, so may the mental faculties vary indefinitely in correspondence with certain physical changes. In this way he seeks to account for all the higher mental powers, as the use of language and reason, the sentiment of beauty, and conscience. Finally, Darwin seeks to give a practical and ethical turn to his doctrine, since he defines the general good—the proper object of man's action—as "the rearing of the greatest number of individuals in full health and vigor, and with all their faculties perfect under the conditions to which they are subject." It is well to observe that if Darwinism confined itself to a strict following of the great investigator, it might involve less of philosophic and metaphysical theory than has become popularly associated with it, for much of which Darwin is not to be held responsible. For further exposition of Darwin's views, see EVOLUTION and NATURAL SELECTION, and the discussion of special phases of his doctrine and investigations under other titles there indicated.

Darwin's later life was devoted to the demonstration of his theory by a series of studies, the results of which appeared chiefly in the following books: *Fertilization of Orchids* (1862); *Variation of Animals and Plants under Domestication* (1868); *Expression of the Emotions in Man and Animals* (1872); *Insectivorous Plants* (1875); *Climbing Plants* (1875); *The Effects of Cross and Self Fertilization in the Vegetable Kingdom* (1876); *Different Forms of Flowers in Plants of the Same Species* (1877); *The Power of Movement in Plants* (1880); and *On the Formation of Mold by the Action of Earthworms* (1881).

Personally Darwin was characterized by a kind disposition, gentle manners, and brilliant conversational qualities. His warm-heartedness, added to his genius, made for him strong friends, many of whom were of great assistance to him in gaining an acceptance of his theories. His methods of study were interesting. He was a voluminous gatherer of notes on topics which interested him; in experimentation he was quick in his movements and accurate. As in the case of many other leaders of science, his brain was fertile in hypotheses, which were readily rejected when experiment had shown them to be faulty. Although his correspondence was voluminous, he attended to it all with scrupulous care, replying courteously even to a request from a young man who was preparing a lyceum lecture for an abbreviated statement of his views, as the writer had no time to read his books. He died April 19, 1882, full of years and honors. He was awarded the Prussian order *Pour le Mérite* (1871), and was made a member of the French Academy in 1878.

The centenary of the birth of Charles Darwin and the fiftieth anniversary of the publication of the *Origin of Species*, which was celebrated in 1909, was the occasion of the publication of many important volumes. The most significant of these concerned the relation of modern trends of thought to the original "Darwinism." Among these volumes may be mentioned: Francis Darwin (ed.), *The Foundations of the "Origin of Species"* (Cambridge, 1909); essays by various American authors, *Fifty Years of Darwinism* (New York, 1909); essays by various foreign authors, *Darwin and Modern Science* (Cam-

bridge, 1909); J. A. Thomson, *Darwinism and Human Life* (New York, 1910).

Consult also: *Life and Letters of Charles Darwin* (3 vols., London, 1887; reprinted in 2 vols., New York, 1893); *More Letters of C. Darwin* (1903); Pauly, *Darwinismus und Lamarckismus* (Munich, 1905).

DARWIN, ERASMUS (1731-1802). An English physician and naturalist, the grandfather of Charles Darwin. He was born at Elton. He was a keen and philosophic observer of nature and embodied much of his observations and thoughts in didactic verse, which form several long poems, whose style is stilted and fancifully elaborate. The principal of these is *The Botanic Garden* (1789), of which the second part, entitled "The Loves of the Plants," became famous and was translated into French and Italian. It contained many suggestions as to "protective mimicry" and other features afterward a part of the elaborated doctrine of the evolution of plants. In 1794-96 was published his *Zoonomia*, in prose, which was primarily a medical work, but contained many more general reflections, and received wide notice. Its ideas were so novel and revolutionary that, according to Samuel Butler, Paley's *Natural Theology* was aimed at it and extinguished for a time its influence. Charles Darwin wrote of it, in his *Origin of Species*: "It is curious how largely my grandfather anticipated the views and erroneous grounds of opinion of Lamarck"; and modern students see also that he anticipated much that Charles Darwin himself advanced to acceptance. Erasmus Darwin's views on evolution include the belief that all animals have originated from a single living "filament"; that changes are produced by differences of climate; that all animals undergo constant changes and that many of their acquirements are transmitted to their posterity; that the contests of the males for the possession of the females lead to such results as were afterward stated under the name of "sexual selection"; that many structures have been acquired as a means of security in a struggle for existence; and that a vast length of time has elapsed since these modifications began. The debt which Charles Darwin, Lamarck, and other exponents of the doctrines of organic evolution owe to Erasmus Darwin has been carefully considered by Packard in his biography of Lamarck (New York, 1901), and by Krause in *The Scientific Works of Erasmus Darwin* (1879); also by Butler, *Evolution, Old and New* (London, 1879). A meagre biography by Anna Seward was published in London in 1804. Dr. Darwin's last work was *Phytologia, or the Philosophy of Agriculture and Gardening* (1799), in which he expresses a belief that plants have sensation and volition. He died at Derby. See EVOLUTION.

DARWIN, FRANCIS (1848-). An English botanist, a son of Charles Robert Darwin, born at Down, Kent. He received his education at Trinity College, Cambridge, studied medicine at St. George's Hospital in London, assisted Charles Darwin at Down, in 1888 was made reader in botany at the University of Cambridge, and in 1903 became foreign secretary of the Royal Society, and president of the British Association in 1908. His publications include: *Life and Letters of Charles Darwin* (1887); *Charles Darwin* (1892); *Practical Physiology of Plants*, jointly with Acton (1894); *Elements of Botany* (1895); *More Letters of Darwin*, with

A. C. Seward (1903); *Foundation of the Origin of Species* (1909). Charles Darwin's *Power of Movement in Plants* was prepared with the son's aid.

DARWIN, GEORGE HOWARD (1845-1912). An English geologist, son of Charles Robert Darwin. He was born at Down, Kent, and after graduating at Trinity College (1868), where he was later a fellow (1868-78), he was admitted to the bar; he did not practice, however, but devoted his entire attention to mathematical science and particularly to experimental investigation on the pressure of loose sands, changes in the level of the earth's surface, and minor earthquakes. His publications include papers on *The Harmonic Analysis of Tidal Observations* (1883); *The Effects of Tidal Friction on the Earth and Moon*; *Periodical Orbits* (1896); *Tides and Kindred Phenomena* (1898). In 1882 he assisted Sir William Thomson in the preparation of a new edition of Thomson and Tait's *Natural Philosophy*. A year later he was appointed Plumian professor of astronomy and experimental philosophy at Cambridge. He was a member of the Royal Society and a member of the council of the Meteorological Office (1885-1905), and was elected president of the Royal Astronomical Society in 1899 and president of the British Association a short time before his death.

DARWIN, MOUNT. A mountain of Tierra del Fuego, South America, 6890 feet in altitude (Map: Chile, D 14). It is named after Charles Darwin.

DARWINISM. See DARWIN, CHARLES; EVOLUTION; NATURAL SELECTION.

DASE, dā'ze, JOHANN MARTIN ZACHARIAS (1824-61). A mathematical prodigy, born in Hamburg. When a boy, he gave public exhibitions as an expert calculator. One of his feats was the rapid multiplication of a series of 50 figures or more by another series of equal length, and he is said to have been equally expert in extracting the cubic root of numbers containing from 80 to 100 figures—a task he frequently performed in less than an hour. He published *Tafeln der natürlichen Logarithmen der Zahlen* (1850) and *Factoren-Tafeln für alle Zahlen der siebennten Milhen, oder genauer von 6,000,001 bis 7,002,000 mit den darin vorkommenden Primzahlen* (1862-65).

DASENT, dā'sent, SIR GEORGE WEBBE (1817-96). An English scholar and author, born at St. Vincent, West Indies. He was educated at Oxford, was appointed civil-service commissioner in 1870, and in the following year assumed the editorship of *Fraser's Magazine*. He was also associated for some time with the London Times and edited the *Icelandic-English Dictionary* (1874). In addition to a translation of *The Younger Edda* (1842), he wrote the following: *The Norsemen in Ireland* (1855); *The Story of Burnt Njal* (1861); *Selection of Norse Tales* (1862); *The Vikings of the Baltic* (1875); *Heroes of Iceland* (1905). His *Annals of an Eventful Life* passed through five editions (latest ed., 3 vols., 1870).

DASHEEN'. A tuberous-rooted species of *Colocasia*, of the family Araceæ, extensively cultivated in the West Indies, where it is known under a variety of names, such as coco, eddo, tania, malanga, etc. It has often been confused with the yautia (*Xanthosoma sagittifolium*), but it is much more closely allied to the taro (*Colocasia esculenta*) of the Pacific islands. The

tubers form a substitute for potatoes, the young leaves are used as a potherb, and the young shoots may be substituted for asparagus. The cultivation of dasheens has been undertaken with some success in the South Atlantic and Gulf States, large yields of tubers being reported.

DASHKOFF, dāsh'kōf, EKATERINA ROMANOVNA, PRINCESS (1743-1810). A prominent figure in Russian political and literary circles during the latter half of the eighteenth century. She was the daughter of Count Vorontsoff. At the age of 15 she was married to Prince Dashkoff, an officer of the Imperial Guard. As an intimate friend of the Grand Duchess Catharine, the Princess appears to have taken an active part in the conspiracy of 1762, which placed her mistress on the throne as Catharine II (q.v.). Prince Dashkoff died in 1761, and his widow gave herself up to her children, to literature, and to politics. A coldness between herself and the Empress now ended in a quarrel and in her retirement from the court. After an extended tour through Europe the Princess returned to Russia in 1782, and was at once restored to Imperial favor. She was appointed director of the Russian Academy of Science and in 1783 became first president of the Russian Academy, which was established through her efforts. On the death of Catharine II, in 1796, she was deprived of her offices and ordered by Paul I to retire to her estates at Novgorod. Later on she was allowed to reside in Moscow, where she died. The Princess wrote several comedies and was mainly instrumental in inducing the Russian Academy to draw up a dictionary of the Russian language. The work was completed under her direction and was in part written by her. Her memoirs have been edited by Mrs. W. Bradford (London, 1840). Consult Souvorine, *La Princesse Dashkov* (St. Petersburg, 1888, Russian).

DASHORST, ANTONIS MOR VAN. See MOR VAN DASHORST.

DASHT, dāsh't, or **DESHT**, dēsh't. A river of Baluchistan, Asia, running through the southwestern portion of the country and falling into the Arabian Sea (Map: Persia, H 7). Its northern branch, the Nihing, forms a part of the boundary between Baluchistan and Persia. The combined rivers are 175 miles long.

DASKAM, dās'kam, JOSEPHINE DODGE (Mrs. Selden Bacon) (1876-). An American author. She was born in Stamford, Conn., and graduated at Smith College in 1898. Her first book was *Smith College Stories* (1900), but she first excited general interest by *The Madness of Philip* (1902), a volume presenting with much humor and common sense some elements of modern primary education. Her later works include *Memoirs of a Baby* (1904); *The Domestic Adventures* (1907); *Biography of a Boy* (1910); *The Inheritance* (1912); *The Luck o' Lady Joan* (1913); *To-Day's Daughter* (1914).

DASS, dās, PETER (1647-1708). The father of modern Norwegian poetry. He was born at Nord-Herø, the son of an immigrant Scottish merchant and a Norse woman of good breeding. He attained in the Church a position of dignity, responsibility, and some danger, on the north coast of Norway, where with brief intermissions he lived peacefully and wrote unremittingly verses and a garrulous *Autobiography*. His work circulated in manuscript, but little was printed in his lifetime, and the first collection of his *Works* was by Eriksen (Christiania,

1783-77). *The Northland's Trumpet*, his most famous poem, was not printed till 1739. This rhyming description of land and people, quaint, witty, fanciful, and in an unforgettable lilting measure, is known by heart throughout northern Norway. Noteworthy, too, are the *Valley Song* (1696) and *Spiritual Pastime* (1711), a collection of religious verse.

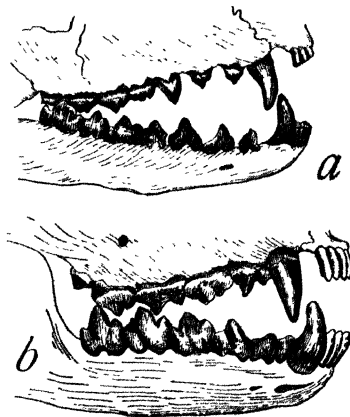
DAS'SIE, or **DASSY** (South African). A familiar diminutive in Cape Colony of the local Dutch name *Klip-das* for the South African hyrax (*Procavia capensis*); also called rock rabbit by English colonists. See **HYRAX**.

DASTRE, das'tr', FRANK ALBERT (1844-). A French physiologist, born in Paris. He studied at the Ecole Normale Supérieure, of which he became fellow, and was appointed professor of natural history at the Lycée Louis-le-Grand. In 1887 he was called to the chair of physiology at the Sorbonne. He translated S. Weir Mitchell's *Injuries of Nerves, and their Consequences* (1872), as *Des lésions des nerfs et de leur conséquence* (1873), and wrote: *Rôle physiologique du sucre du lait* (1882); *Recherches expérimentales sur le système vasomoteur* (with Morat, 1884). *Les anesthésiques: physiologie et applications chirurgicales* (1890); *La vie et la mort* (1903-11; Eng. trans., *Life and Death*, by W. J. Greenstreet, 1911); and other scientific works.

DASYPÆDES, dās'i-pē'dēz. See subtitle *Plumage*, in the article **BIRD**.

DASYTUS. See **ARMADILLO**.

DASYURE, dās'i-ūr (from Gk. δασύς, *dasyς*, shaggy + οὐρά, *oura*, tail). A marsupial of the family Dasyuridae, which includes various highly generalized carnivorous and insectivorous forms of Australasia allied to the opossums, and closely representative of Tertiary forms found fossil in South America and elsewhere. Eventually it



DENTITION OF DASYURES.

a, Tasmanian wolf (*Thylacinus*); b, Tasmanian devil (*Sarcophilus*)

appears certain that this group will be split into several families based on such important characters as a varying number of premolars and the presence or absence of epipubic bones, but at present they may be kept under the one heading. Their hind and fore limbs are approximately equal, and the toes (of which the second and

third of the hind feet are entirely free) are well developed and clawed; their tails are long, hairy, curling, and not prehensile; their dentition is carnassial, the canines often being large tusks, and there are eight large incisors in the upper jaw; and a cæcum is lacking. Many of the dasyures are strong, fierce, catlike beasts of prey, scattered over Australia, New Guinea, and especially prevalent in Tasmania, where, as also in southeastern Australia, they have become rare owing to the war made upon them by the colonists. All are mainly terrestrial and live in burrows.

Prominent among these beasts is the thylacine, or Tasmanian zebra wolf or pouched dog (*Thylacinus cynocephalus*). It is very wolflike in appearance, but somewhat smaller than the common wolf, with shorter hair, a long terete, comparatively smooth tail, and more rounded ears. Its color is grayish brown, with the hinder part of the back and root of the tail barred with blackish stripes diminishing to points on the flanks. It dwells in rocky dens, seeks its prey at night, and until reduced in numbers was a destructive pest to the flocks of sheep.

Another is the ferocious Tasmanian devil (*Sarcophilus ursinus*), which is a heavy, powerful, long-furred, almost black animal resembling a bear, but only about the size of a badger, and having a long thick tail. It also is decidedly nocturnal, sleeping by day in some dark lair or burrow, and attacking sheep and lesser prey by night, nothing being safe from its strength and ferocity; but this pest is now nearly exterminated.

On the continent of Australia several very catlike or civet-like dasyures occur, of which the handsomest is the spotted "native cat," nearly as large as a house cat, but some of this genus (*Dasyurus*) are much smaller. To the genera *Phascogale* and its allies belong a variety of small insect-eating dasyures greatly resembling rats and mice in their appearance and living mainly on insects, birds' eggs, etc.; and another now very rare form (*Antechinomys laniger*) has much the form and appearance of a jerboa. Finally, there must be mentioned the banded anteater (*Myrmecobius fasciatus*), "which derives its special interest from the circumstance that it comes closer to some of the extinct marsupials of the Secondary rocks of Europe than does any other living type." This animal is about the size of a squirrel, but has a viverrine form and long, somewhat bushy, tail. In many of the dasyures the pouch is rudimentary, but here the female has no pouch, "the young, when first born, being merely concealed by the long hair of the belly as they cling to the teats (four in number)." Its teeth are all small and adapted to eating the insects that constitute its fare—mainly ants and termites, which are gathered by the long and protrusile tongue. Hence it is found chiefly in the sandy plains of southern and western Australia, where it dwells in the hollows of ant hills and similar retreats. Its general hue is white beneath, and on the upper part dark chestnut red marked by broad transverse bars of white. See *MARSUPIALIA*; and *Plate of PHALANGS*.

DATE. See *CALENDAR*; *CHRONOLOGY*.

DATE AND DATE PALM (OF. date, *datil*, *datille*, Fr. *datte*, from Lat. *dactylus*, Gk. *δάκτυλος*, *daktylos*, finger, date; so called from the shape). The common date of commerce is the fruit of the date palm (*Phoenix dactylifera*).

Besides this there are several other species which bear fruits of more or less value, but none rank in importance with *Phoenix dactylifera*. This plant is a native of the southwest of Asia and the northern half of Africa, finding its most congenial home and most extensive cultivation in Arabia and the oases of Africa. The plant is also cultivated in China, in France, Italy, and sparingly in the United States. California and Arizona, however, promise to become commercial date-producing sections.

The date is borne on one of the tree palms, although many of the representatives of the genus *Phoenix* are low-growing plants. The date palm is a tree ranging from 40 to 80 feet in height, bearing a dense head of pinnated leaves several feet in length. The plant is dioecious, the staminate flowers being borne on one plant, while the pistillate ones are borne by another individual. This peculiarity is well understood by the natives, who cut off the staminate flower clusters and place them in the pistillate trees to insure fertilization. Since each tree reproduces its sex in the sprouts or suckers from its base, date orchards or plantations are made up of the young plants taken from the roots of bearing trees, with only a sufficient number of staminate plants to insure fertilization. The date enjoys a hot, bright, sunny situation, thrives on soils too alkaline for other vegetation, but must have water within reach of its roots. The bearing age is reached in about eight years, and as the plants are long-lived and frequently bear as much as 300 to 500 pounds of fruit in a season when at full bearing, they become enormously profitable; in fact, the date is the chief source of wealth for Arabia, and is used as the staple food by caravans crossing the great desert. The fruit possesses a high food value, being chiefly composed of sugar, together with pectin, gum, and proteids. The fruits are eaten both fresh and dried, and there are two kinds—soft dates, the ones usually seen at confectioners, and dry dates, which are the ones most commonly grown and used in their native habitats. Both kinds vary in size, color, and quality. The seeds when roasted form a substitute for coffee, and when ground yield a valuable oil as well as a pomace used as a cattle food. Besides these products the tree itself yields in its leaves materials for baskets and wickerwork; the trunk yields a fibre from which twine and rope can be made; an edible bud known as "palm cabbage" is produced at the crown of the tree, and the wood is used for fencing and for the construction of light shelter. Besides these economic uses, the date palm has long figured conspicuously in religious services among Jews and Christians as well as among pagans. The *palm tree* of the Scripture is *Phoenix dactylifera*, and Christ's triumphal entry into Jerusalem is to this day celebrated on Palm Sunday. It has other symbolic meanings; to the Hebrews and Hellenes it stood as the symbol of beauty and of victory. See *Plate of MONOCOTYLEDONS*.

DATE LINE. See *INTERNATIONAL DATE LINE*.

DATE PLUM. See *PERSIMMON*.

DATE SHELL, or DATE FISH (so named from its shape). 1. A shell of a small bivalve mollusk or date fish of the genus *Lithodomus* (or *Lithophagus*), closely allied to the horse mussel (*Modiolus*), which burrows deeply into calcareous rocks, the shells of larger mollusks, etc. One species (*Lithodomus lithophagus*)

abounds in the Mediterranean and is of interest mainly because of its perforations of certain columns of the ancient temple of Serapis at Pozzuoli (ancient Puteoli), a few miles west of Naples, Italy. These columns are of African marble and several centuries ago were carried by the sinking of the ground below the level of the sea, which overflowed the site of the ruins and submerged the pillars to the height of 13 feet, exposing them to attack by these mollusks, which burrowed into them in large numbers. Subsequently they were slowly elevated and have since been above the water. The method of boring rocks is not thoroughly understood, but is thought to be mainly by abrasive movements of the foot. 2. In California, an edible bivalve mollusk (*Zurphaa crispata*) related to the piddock (q.v.).

DATHOLITE. See DATHOLITE.

DATI, dā'tā, CARLO ROBERTO (1619-75). An Italian philologist and writer, born in Florence. His *Discorso dell' obbligo di ben parlare la propria lingua* (1657) is an important document in the campaign for linguistic purism based on classic imitation. In this work, and as professor of the Grand Duke in Florence, Dati was supported by the Crusca Academy, praised by Fontanini (*Biblioteca dell' eloquenza italiana*, annotated by Apostolo Zeno, Venice, 1753, and *Elogio*, Florence, 1794) and opposed by Daniello Bartoli (q.v.). Consult Trabalza, *Storia della grammatica ital* (Milano, 1908).

DATIA, dāt'ā. The capital of the principality of the same name in Central India, 280 miles west of Benares (Map: India, D 4). It stands on a rocky height surrounded by a stone wall and is well built, with an unusual number of stone houses. The chief of the Datia State dwells here. West of the town rises a palace of immense size and remarkable beauty, one of the best pieces of Hindu architecture in India, and there are interesting Jain temples, 4 miles distant. Pop., 1901, 24,071; 1911, 17,329.

DATIS (Lat., from Gk. *δᾱtis*, from Pers. *Dātēh*, good according to the law, from *dāt*, OPers. *dāta*, law + *rēh*, Av. *rohu*, good). A Persian general. With Artabanes, he commanded the army of Darius which was defeated at Marathon by Miltiades 490 B.C. Afterward he was killed by the Spartans.

DATIVE. See DECLENSION.

DATO É IRADIER, dā'tō ā'ērā-dyār', EDUARDO (1856-). A Spanish juriconsult and statesman, born at Coruña, Aug. 12, 1856. After studying law at the University of Madrid he there received his doctorate in jurisprudence in 1875. The following year he attained some prominence through certain articles that he published in the *Revista de los Tribunales*. In 1884 he was elected deputy for the District of Murias de Paredes (León), and again in 1891, 1893, etc. Although originally affiliated with the Conservatives under the leadership of Cánovas, he later withdrew with Silvela. Raised (1887) to a seat on the governing board of the Colegio de Abogados of Madrid, he served (1890-94) as third vice president of the Real Academia Matritense de Jurisprudencia y Legislación, which had previously honored him with election as academician and professor. Previous to 1890 he had often appeared at congresses of jurists as the exponent of important themes of jurisprudence. Charity also claimed his interest, and in 1899 he became a member of the Provincial Board of Charities. As

Minister of Internal Affairs in Silvela's cabinet, he made in 1900 a trip to Catalonia in order to be able to study on the ground the labor question. With the return of the Conservatives in 1902 (after the fall of the intervening Liberal cabinet), he became Minister of Grace and Justice. The Real Academia de Ciencias Morales y Políticas honored him with election as member in 1905. When the Conservatives again came into power, in 1907, Señor Dato was Mayor of Madrid; and upon the organization of the new Cortes, he was elected President of the Chamber of Deputies. After the fall of the Liberal ministry of the Count of Romanones in 1913, the Conservative Dato was appointed Prime Minister and asked to form a new ministry.

DATHOLITE, or **DATHOLITE** (Gk. *δαθολίτης*, *datholthai*, to divide + *λίθος*, *lithos*, stone; referring to its granular structure). A boron and calcium orthosilicate that crystallizes in the monoclinic system. It is usually found in the form of glassy, greenish crystals, but sometimes has a yellow or reddish tinge. A compact, massive variety occurring with the copper of Lake Superior is white and opaque and breaks with a conchoidal fracture like porcelain. Datholite usually occurs in veins and cavities in basic eruptive rocks, often with calcite, prehnite, and the zeolites. It is found in Scotland, Norway, Sweden, and various places on the Continent. In the United States it occurs at Bergen Hill and Paterson, N. J., in Connecticut and Massachusetts, and in the Lake Superior region. The crystals take a high polish and have been cut as opaque gems or ornamental stones.

DATURA. See STRAMONIUM.

DATURINE. See ALKALOIDS; ATROPINE.

DAUB, doup, KARL (1765-1836). A German speculative theologian. He was born at Cassel and educated at Marburg, where he was tutor for a time; became professor of philosophy at Hanau in 1794, and soon afterward of theology at Heidelberg, where he remained until his death. He was one of the leaders of a school which attempted to reconcile theology and philosophy. His writings, based on the philosophies, successively, of Kant, Fichte, Schelling, and Hegel, were once important for their argumentative method, but are no longer much read. The principal ones are: *Lehrbuch der Katechetik* (1801); *Theologumena* (1806); *Einführung in das Studium der Dogmatik* (1810); *Die dogmatische Theologie jetziger Zeit oder die Selbstsucht in der Wissenschaft des Glaubens* (1833).

DAUBAN, dō'bān', JULES JOSEPH (1822-1908). A French painter. He was born in Paris and studied there under Auguste Debay. He became director of the School of Fine Arts at Angers in 1850 and was made a member of the Legion of Honor in 1868. Among his works are "Trappists Receiving a Stranger" (1864), in the Luxembourg; "Trappists Exchanging the Kiss of Peace" (1865), in the Angers Museum; and "Fra Angelico da Fiesole" (1873). He produced several decorative paintings in the theatre and hospital at Angers, and in the church of Saint-Louis-en-l'Isle, Paris. Despite a certain coldness of color, his compositions are dignified and impressive. His last important work was six decorative compositions for the church of Quintin (*côtes du Nord*).

DAUBENTON, dō'bān'tōn', LOUIS JEAN MARIE (1716-99). A French naturalist, born at Montbard, May 29, 1716. In 1742 he became associated in Paris with Buffon in the prepara-

tion of the latter's great *Histoire naturelle*, for which he furnished the anatomical descriptions relating to mammals. In 1745 Daubenton became curator and demonstrator of the cabinet of natural history of the Académie des Sciences and in 1778 professor in the Collège de France. He wrote voluminously, and has been especially influential in the science of herpetology. He died in Paris, Dec. 31, 1799.

DAUBER, dâb'êr, or MUD DAUBER. See MUD WASP.

D'AUBIGNÉ, dô'bé'nyâ'. See MERLE D'AUBIGNÉ.

D'AUBIGNÉ, THÉODORE AGRIPPA (1552-1630). A Protestant historian, poet, and soldier, born near Pons in Saintonge, France, Feb. 8, 1552. He was educated at Geneva. Latin, Greek, and Hebrew were familiar to him from his earliest youth, and at seven years of age he is said to have made a translation of Plato's *Crito*. His father had inspired him with an enthusiasm for the Huguenot cause, and he was present at the siege of Orléans in 1563, when the elder D'Aubigné was slain. The son played a prominent part in the religious wars preceding the accession of Henry of Navarre. Though opposed to that prince's conversion, he consented to serve him and was made vice admiral of Guienne and Brittany. D'Aubigné was famous for his rough wit and frank speech, and he did not hesitate to use the most outspoken sarcasm against the King and other members of the royal family. The assassination of Henry IV. in 1610, caused D'Aubigné to retire to his estates, and later he took up his residence at Geneva. There he employed himself in literary work and in furthering the cause of Protestantism in every way possible. His last years were embittered by the conduct of his son Constant, who betrayed the trust reposed in him by the Huguenots. This son was the father of the Duchesse de Noailles and of Madame de Maintenon. D'Aubigné died April 29, 1630, leaving as his literary legacy a number of works, of which the following deserve mention: *Histoire universelle, 1550-1601*; *Confession catholique du Sieur de Sancy*; *Aventures du baron de Farneste: histoire secrète écrite par lui-même*. They are very outspoken and free in their criticism of the men and measures of the times, so much so that the third volume of the *Histoire universelle* was ordered to be burnt by the common hangman in Paris. These, above mentioned, with others of less importance, will be found in *Œuvres complètes de Th. d'Aubigné*, edited by MM. Réaume and de Caussade, which also contains *Sa vie et ses enfants*, the best biography. Consult also Réaume, *Etude historique et littéraire sur A. d'Aubigné* (Paris, 1883), and Rocheblave, *Agrippa d'Aubigné* (Paris, 1910); id., *La vie d'un héros* (Paris, 1913).

DAUBIGNY, dô'bényé', CHARLES FRANÇOIS (1817-78). A French landscape painter and etcher, one of the chief masters of the Barbizon. He was born in Paris, Feb. 15, 1817. His father was a teacher of drawing and a painter who occasionally exhibited at the Salon. Charles François was brought up by an old nurse at Valman-dois, near Ile-Adam, where he remained until his tenth year. In this, his childhood home, to which he frequently returned and where he finally settled, he imbibed his great love for nature. On his return to Paris he studied under his father and uncle, a miniature painter, and helped support the family by painting articles like fans,

snuffboxes, and even business signs. In his seventeenth year he went to Italy with a friend and fellow artist, traveling on foot. He remained there for a year, but was not much influenced by his sojourn. In 1840 he entered the studio of Delaroche, with a view to competing for the Prix de Rome, but, having been disqualified, he was thrown upon his own resources. He turned to nature and was thenceforth a landscape painter. With the exception of the years 1842-46, he exhibited every year in the Salon. He received first-class medals in 1853, 1857, and 1859, and in 1857 he was made Chevalier of the Legion of Honor. Gratified with his success in painting river scenery, he built a house at Auvers on the Oise, near his childhood home. He constructed a curious boat, the *Botin*, at the same time a house and a studio, in which, accompanied by his son Karl, he navigated at will, sketching river scenery. In 1876 he visited Normandy, bringing back with him many sketches of the sea and the shores of the channel. During the latter part of his life he suffered much from rheumatism contracted on his river trips. He died in Paris on Feb. 19, 1878.

Daubigny was the youngest of the five great landscape painters of the Barbizon school. The rest were perhaps greater discoverers than he. They painted nature with figures as a subordinate incident of the scene and only adding to the artistic sentiment they wished to express. Daubigny painted the country, that is to say, nature as affected by man, although men do not usually appear in his scenes. There are certain kinds of landscapes which he may be said to have discovered and which are indissolubly linked with his name. He is the great painter of river scenery of central France, on the Seine, the Marne, and the Oise; of orchards, full of white blossoms or laden with ripe fruit, and of the fields; of the sea and of the shores of the Channel. His favorite light was at dusk, in the cool of the evening, or the pale light of the moon. A delicate shade of vaporous air pervades his paintings; his values are just, and the colors are properly juxtaposed. His paintings do not always present distinctness of outline, for drawing was not his strong point, but the handling is massive and powerful. In his early period he paid more attention to detail, but he increasingly adopted greater breadth of treatment, and his last works may almost be called impressionist.

Among his chief works are the "Valley of Optevoz," which took the gold medal in 1853. In the Louvre are his "Springtime," in which one can fairly smell the apple blossoms and see the green grass grow, the "Lock of the Optevoz," and the "Vintage." Other important works are the "Beach at Villerville" (1859); "Moonrise" (1861); "The Sheepfold" (1866); and the "Apple Orchard" (1876), an autumnal scene in which the prevailing tone is a dark, rich green, with apples ripe for the pickers. The chief public galleries of America are well supplied with his works, as are also some of the private collections. Daubigny unfortunately sold to art dealers a large number of works which are little more than sketches. These are frequently met with in picture collections, but no adequate conception of his work can be formed from them. Besides being a great painter, Daubigny was an etcher of repute, especially in the period after his return from Italy.

Consult his biography by Hustin, in *Les artistes célèbres*; Tryon, in *Van Dyke's Modern*

French Masters (New York, 1896); Henriot (Paris, 1878); Bourges (ib., 1900); and his biography by Laran (ib., 1913). See also the bibliography of BARRIZON, THE PAINTERS OF.

DAUBIGNY, KARL PIERRE (1846-86). A French landscape painter and etcher. He was born in Paris, the son and pupil of Charles François Daubigny (q.v.), whom he accompanied on his famous houseboat voyages on the rivers of France. His pictures, the subjects of which were mostly chosen from the valleys of the Seine and Oise, the coasts of Brittany and Normandy, and the Forest of Fontainebleau, were at first painted in his father's style, but his later works bear the impress of his own individuality. Among them may be mentioned: "Return from Fishing" (Aix Museum), "The Thames Near Chelsea," "Road from Paris to Fontainebleau," "The Farm of St. Simeon Near Honfleur," and "Moonrise at Sunset" (1886), his last, and also one of his best, efforts.

DAUBRÉE, dō'brā', GABRIEL AUGUSTE (1814-96). A French geologist and mineralogist. He was born at Metz and was educated at the Ecole Polytechnique in Paris. At the age of 20 he had qualified as a mining engineer: in 1838 he was appointed to take charge of the mines in the Bas-Rhin (Alsace) and was also given a chair at Strassburg. In 1861 he became a member of the Academy of Sciences in Paris, where he held professorships at the Museum of Natural History and at the School of Mines, of which latter he became director in 1872. Besides a very large number of original papers, Daubrée's published works include: *Etudes et expériences synthétiques sur le métamorphisme et sur la formation des roches cristallines* (1860); *Etudes synthétiques de géologie expérimentale* (1879); *Les météorites et la constitution du globe terrestre* (1886); *Les eaux souterraines* (3 vols., 1877). His researches resulted in valuable contributions to our knowledge of the mode of formation of various mineral substances and of crystalline rocks.

DAUCUS. See CARROT.

DAUDET, dō'dā', ALPHONSE (1840-97). A French humorist and satirist, remarkable for the grace of his style and the keenness of his observations. Born in Provence, of which he was typical in the warmth of his imagination, he lived for a time at Lyons and later migrated to Paris, where he came in contact with the literary Bohemians of the capital. He held a sinecure secretaryship on the staff of the Duc de Morny in 1861-65, and had an opportunity to study the life of the aristocrats and higher politicians of the Second Empire. At the age of 27 he married Mlle. Julia Allard, an ideal helpmeet, also a writer, whose inspiring though practical mind guided his impulsive and impracticable nature.

In *Tartarin de Tarascon* (1872), *Tartarin sur les Alpes* (1886), and the inferior *Port Tarascon* (1890), he gave a most good-natured and satirical caricature of his fellow southerners, whom he pictured as the victims of their own wild boastfulness and as the dupes of their exaggerated imaginativeness. The sufferings of his early life, especially of the year when he was usher in a provincial school, are described in his *Le petit chose* (1867) and in *Jack* (1876). With *Froment jeune et Risler aîné* (1874) Daudet began his famous series of "Parisian Dramas" that depict certain types, such as the talentless and selfish comedian, Delobelle, and Sidonie, the

feminine incarnation of evil. Then came *Léonobob* (1877), in which we find a capital portrayal of the Duc de Morny and the aristocracy of the day. *Les rois en exil* (1879) is a picture of Paris as a refuge for dethroned kings. *Numa Roumestan* (1881) is a humorous and kindly satire of Gambetta. *Séraph* (1884), a work of great power and noble purpose, sounds a note of warning against the dangers of illicit liaisons. The realism in the too accurately described scenes of sensual love weakens the ultimate effect of the work. This was due to the temporary influence of the Naturalist school upon Daudet. *L'Immortel* (1888), a cruel and pointless satire of the French Academy, marks the decline of the author's genius, due to the ravages of a chronic nervous trouble. The *Lettres de mon moulin* (1869) and *Contes du lundi* (1873) contain the shorter compositions of Daudet, several of which are now ranked among the greatest classics of the French language.

Literary critics appreciate Daudet for his polished style, his originality, and his insight into the foibles of humanity. His unaffected sympathy, somewhat tinged with a certain melodramatic sentimentality, and his saving sense of humor, probably constitute Daudet's greatest appeal to the average reader. Daudet, better than any other author of his day, reflected the spirit of the south of France, and the life of Paris in many of its most interesting and varied aspects. His reminiscences are embodied in *Trente ans de Paris* (1888) and *Souvenirs d'un homme de lettres* (1889). His works have been translated into English, a complete edition appearing in Boston in 1900. Consult: Ernest Daudet, "Mon frère et moi," included in *Alphonse Daudet*, by Léon Daudet, trans. by Charles DeKay (Boston, 1898); Brunetière, *Le roman naturaliste* (Paris, 1896); Doumic, *Portraits d'écrivains* (ib., 1892); L. A. Ashelman, *La société française d'après l'œuvre d'Alphonse Daudet* (ib., 1910); G. A. Ratti, *Les idées morales et littéraires d'Alphonse Daudet d'après ses œuvres* (ib., 1911); Arthur Ransome, *Portraits and Speculations* (London, 1913).

DAUDET, ERNEST (1837-). A French novelist, journalist, and historian, born at Nîmes, May 31, 1837. Of Alphonse Daudet, his brother, he wrote an interesting biographical sketch, *Mon frère et moi* (1882), translated as an appendix to *Alphonse Daudet*, by Léon Daudet (Boston, 1898). Completely overshadowed in fiction by his brother, he devoted his energies to the field of historical research, in which he became known as a prolific and reliable contributor. His most noteworthy works are: *Histoire des conspirateurs royalistes* (1881); *Le roman d'un conventionnel* (1904); *Histoire de l'émigration* (3 vols., 1905-07); *Les récits des temps révolutionnaires* (1908); *Tragédies et comédies de l'histoire* (1912). His *Madame Royale*, in an English translation by Mrs. Rodolphe Stowell, was published in New York (1913). Consult Ernest Charles, *Les samedis littéraires* (Paris, 1903).

DAUDET, LÉON (1869-). A French novelist, son of Alphonse Daudet. He was born at Paris and studied medicine, but made some mark in literature with his first works, *Germe et poussière* (1891) and *L'Astre noir* (1893), the latter a sharp satire against Victor Hugo, whose granddaughter was Daudet's first wife. His subsequent publications include *Les morticoles* (1894), which was an attack on the medical pro-

session; *Les deux étrennes* (1900); *Les parlementaires* (1901); *La déchéance* (1904) and *Le partage de l'enfant* (1905); *Comte de Chamarrande* (1906); *Le lit de Procruste* (1912). In 1908 he founded a Royalist daily, *L'Action Française*. He wrote a *Life of his father* (1898), trans. into English by Charles DeKay. Consult a critique in *Revue de Lille*, August, 1910, by Leigene.

DA UDINE. See UDINE.

DAUGHTERS OF THE AMERICAN REVOLUTION, SOCIETY OF. A woman's patriotic society, organized in Washington, D. C., Oct. 11, 1890. Its objects are: to perpetuate the memory of the spirit of the men and women who achieved American independence; to promote institutions for the general diffusion of knowledge; to cherish, maintain, and extend the institutions of American freedom; to foster true patriotism and love of country; and to aid in securing for mankind all the blessings of liberty. Membership is restricted to those women of whose ancestors at least one aided in establishing American independence. The society up to 1914 had admitted to membership about 104,000 women, organized into some 1317 local chapters. Delegates from all chapters meet in annual congress in Washington in the week in which April 19 occurs. The society has collected many historical relics, which have been deposited in the United States National Museum in Washington, and it has also a valuable historical and genealogical library at its headquarters. During the Spanish-American War it aided the government by securing nurses of proper character and qualifications. In 1902 the society purchased a site in Washington, and upon this a Memorial Continental Hall was erected. The National Society was incorporated by Act of Congress in 1896 and, in accordance with that act, reports annually to Congress. The society publishes *The American Monthly Magazine* and also a series of lineage books containing the record of the ancestry of each member of the organization.

DAUGHTERS OF THE CONFEDERACY, UNITED. See CONFEDERACY, UNITED DAUGHTERS OF THE.

DAUGHTERS OF THE KING, THE ORDER OF. An organization of the women of the Protestant Episcopal church, founded in 1885. A distinction should be made between this order and the King's Daughters. The former is the older organization and differs from the latter in many important particulars. It is distinctively an Episcopal and a spiritual organization, and its work is definitely for the "spread of Christ's kingdom among women" and the "active support of the rector's plans in the parish in which the particular chapter may be located." Its constitution is framed as far as it is possible on the terms of the Brotherhood of St. Andrew, the men's organization of the Protestant Episcopal church, to whose purposes and work it closely corresponds. The membership in 1914 was 4500, with 417 senior chapters and 45 junior chapters, with about 400 members. It holds a triennial convention, with headquarters in New York. Its official organ is *The Royal Cross*.

DAUGHTERS OF THE REVOLUTION, SOCIETY OF. A women's hereditary patriotic society organized in New York City in 1891. As originally composed, the society consisted largely of those who had withdrawn from the

Society of the Daughters of the American Revolution (q.v.), because that society then admitted to membership women of collateral descent. The patriotic objects of the two societies are similar, but the requirements for admission to the Daughters of the Revolution are the more stringent. They require a member to be the lineal descendant of an ancestor who actively assisted in the establishment of American independence, and who became thereby liable to conviction for treason against the government of Great Britain. The General Society, which meets annually, is composed of national officers and delegates from the following organized State societies: Arizona, Arkansas, Colorado, Delaware, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Minnesota, New Jersey, New York, North Carolina, Pennsylvania, Texas, Utah, Washington, West Virginia, and Wisconsin. The total membership is about 4000.

DAULATABAD, *dou'la-tà-bād'* (Ar., city of prosperity; Hind. *Deogru*, Skt. *Dēvagrī*, mountain of the gods, from the cliff which commands the town). A strongly fortified town of India, Aurangabad District, State of Hyderabad, near their northwestern frontier, in lat. 19° 57' N. and long. 75° 18' E. (Map: India, C 5). The town is noted for its commanding rock fortress, the scene of many past contentions, which has a height of about 500 feet. The outer wall is 2½ miles in circumference, with three lines of fortifications within it. The town has now a population of less than 1000. The famous cave temples of Ellora are within 7 miles of Daulatabad.

D'AUMALE. See AUMALE.

DAUMET. See DOMAT.

DAUMER, *dou'mër*, GEORG FRIEDRICH (1800-75). An eccentric German poet and philosophical writer, known also by his pen name, Eusebius Emmeran. He was born at Nuremberg, studied at the universities of Erlangen and Leipzig, and from 1822 to 1830 was a professor in the Nuremberg Gymnasium. He passed in a few years from violent rationalism to ultra-Romanism. His writings include: *Glorie der heiligen Jungfrau Maria* (1841); *Polydora*, a collection of secular poems (2 vols., 1855); *Die Urgeschichte des Menschengeschlechtes* (1827); *Die Geheimnisse des christlichen Altertums* (2 vols., 1847); *Aphorismen über Tod und Unsterblichkeit* (1865); *Das Wunder* (1874). For somewhat more than a year he was guardian and instructor of the famous founding Kaspar Hauser (q.v.), in regard to whom he published *Mittheilungen über Kaspar Hauser* (1832), *Enthüllungen über Kaspar Hauser* (1859); *Kaspar Hauser, sein Wesen, seine Unschuld* (1873).

DAUMET, *dô'mâ'*, PIERRE JÉRÔME HONORÉ (1826-1911). A French architect, born in Paris. He studied at the Ecole des Beaux-Arts and obtained the Prix de Rome in 1855. Afterward he accompanied an archaeological mission to Greece under the directorship of M. Heuzey. After the death of Viollet-le-Duc he was made architect in chief for the rebuilding of the Palais de Justice and completed it. In 1885 he became a member of the Institute and inspector general of civil buildings, and later he was appointed government architect. M. Daumet's name became connected with all the important architectural societies in France, and he was elected an honorary member of the Royal Society of British Architects. For many years he maintained an "unofficial" atelier of the Ecole des

Beaux-Arts, Paris, which won a high reputation. His most notable work is the restoration of the Château de Chantilly for the Duc d'Aumale (1876-81).

DAUMIER, dō'myā', HONORÉ (1810-79). A celebrated French caricaturist, painter, and sculptor. He was born at Marseilles, the son of a glass painter of poetic aspirations, who migrated to Paris in 1816. His boyhood was spent in poverty, and after scant and intermittent instruction in drawing he started in 1831 to contribute satirical and political lithographs to the weekly paper. For caricaturing King Louis Philippe as Gargantua, he was imprisoned for six months. Fashion, tittle-tattle, scandal, politics, blemishes of figure, and oddities of character in turn inspired his genius for caricature. Few among his illustrious contemporaries escaped his pencil. His most celebrated work is the series of "Robert Macaire," published in the *Charivari*. The Revolution of 1848 suggested several of his most remarkable political series—"Idylles parlementaires" and "Les représentants représentés." He has left some 3958 lithographs, 200 paintings, and 300 drawings, besides statuettes, busts, and a bas-relief.

Daumier's reputation as a caricaturist eclipsed his ability as a painter, which, though appreciated by fellow artists, has only become generally known since the exhibitions of his work in 1900 and 1901. He is now recognized as one of the most original and important French painters of the nineteenth century. His paintings are small in form and are characterized by excellent modeling, striking treatment of light and shade, and a remarkable facility of execution. Lafontaine's fables, Don Quixote, and Molière's comedies furnished the subjects, which also include popular scenes of all kinds, interiors, religious subjects, and portraits. Good examples are "Christ and the Disciples" (Rijks-Museum, Amsterdam); "The Thieves and the Ass," the portrait of Theodore Rousseau, and a large allegorical canvas, "Republic," all in the Louvre. He is also represented in the museums of Berlin, Bucharest, The Hague (Meerdag Museum), Montreal, Reims, and by two pictures in the Metropolitan Museum, New York. Of his sculpture the best known is the statuette "Ratapoil," cast in bronze by the French state; an example is in the Luxembourg. Though appreciated and loved by his greatest contemporaries, such as Victor Hugo, Balzac, Rousseau, Diaz, Corot, Daubigny, Millet, Courbet, he struggled all his life against poverty and lack of popular appreciation. In 1870 he refused the cross of the Legion of Honor. He became blind in 1877, and died, Feb. 10, 1879, at Valmondois (Seine-et-Oise) in a house given him by Corot, who had ere this procured for him a pension from the Third Republic.

Bibliography. The most important monographs on Daumier are by Alexandre (Paris, 1890) and Klossowski (Munich, 1914); the complete catalogue of his lithographs by Hazard and Delfteil (Paris, 1904). Consult also Champfleury, *Histoire de la caricature moderne* (ib., 1872); Frantz and Czanne, in the *Studio* (London, 1904), and the brief works on his lithographs by Marcel (Paris, 1906) and Cary (London, 1907).

DAUN, doun, LEOPOLD JOSEPH MARIA, COUNT VON (1705-66). An Austrian field marshal and commander in chief of the Austrian forces during the Seven Years' War. He was born Sept.

24, 1705, in Vienna, and entered early upon his military career as an officer in the regiment of his father. In the Turkish campaigns of 1737-39 and in the War of the Austrian Succession he found opportunities for distinction and rose rapidly in rank, being made a field marshal and Privy Councillor after the Peace of Aix-la-Chapelle. He was the first director of the military academy at Wiener-Neustadt and introduced many reforms in the organization of the Austrian army. In 1757 he succeeded to the chief command. He took the field against Frederick the Great in Bohemia and, after a hard-fought battle at Kolin, forced the King to retire from that country. He and Prince Charles of Lorraine were thoroughly beaten by the King of Prussia at Leuthen on December 5 of the same year. On Oct. 14, 1758, he gained another victory over Frederick at Hochkirch, and, but for the late arrival of the Prince of Baden-Durlach with reinforcements, he would probably have annihilated the Prussian army. Again, on Nov. 25, 1759, at Maxen, he compelled the Prussian General Fink to surrender, with 11,000 men. He won no other important victories and was defeated by Frederick at Torgau (1760), where he was wounded for the third time upon the field of battle. He was brave and a skillful strategist, but too deliberate in his movements and no match for his alert antagonist. He won victories without following them up, while Frederick, though losing battles, nearly always derived signal advantages from his campaigns. The Peace of Hubertsburg in 1763 closed Daun's active military career. He died in Vienna, Feb. 5, 1766. Consult *Leben und Thaten des grafen Leopold von Daun* (Frankfurt and Leipzig, 1759-60). See SEVEN YEARS' WAR.

DAUNOU, dō'nōw', PIERRE CLAUDE FRANÇOIS (1761-1840). A French publicist and statesman. He was born at Boulogne-sur-Mer and entered the Congregation of the Oratory in 1777. In 1792 he became a member of the National Convention for Pas-de-Calais, where he had previously held the position of grand vicar under the bishop of the department. He opposed the execution of Louis XVI, but voted for his deportation until a settlement might be effected; and he refused his support to the law proscribing the Girondists. For these views he was imprisoned and escaped death only by the downfall of Robespierre. Throughout this critical period he was distinguished for his moderate policy. He was elected to the Council of the Five Hundred by more than a score of departments, and was its first President. His programme for study in central schools was adopted in 1795. In 1801 he became librarian at the Panthéon, for which he obtained the valuable collection of Pius VI. In 1807 he was appointed the Archivist of the Empire, and in 1808 he founded the Bibliothèque des Archives Nationales. He was editor of the *Journal des Savants* from 1816 until shortly before his death. His works include *Histoire littéraire de la France*, upon which he was employed for 20 years, and *Essai historique sur la puissance temporelle des papes* (1810). Consult Taillandier, *Documents biographiques sur Daunou* (Paris, 1841).

DAUPHIN, dā'fīn; Fr. pron. dō'fā' (OF. *dauphin*, *doſſin*, Fr. *dauphin*, Port. *dafin*, from Lat. *delphinus*, dolphin, on account of the three dolphins on their family crest). Formerly the title of the eldest son of the French King. It was originally the appellation of the lords of

the Province of Dauphiné (q.v.). The last of these, Humbert II, dying childless (1349), bequeathed his possessions to Charles of Valois, grandson of Philippe VI of France, on condition that the heir apparent to the throne of France should bear the title of Dauphin of Vienne and govern the province. Louis XI conferred on the Dauphin almost sovereign rights; but after his time these were gradually abridged, until Dauphiné was placed under the same laws as the rest of the kingdom, and the title became merely honorary. After the Revolution of 1830 it was abolished altogether. Consult Tricaud, *Histoire des dauphins français* (Paris, 1713), and Prudhomme, "De l'origine et du sens des mots dauphin et dauphine," in *Bibliothèque de l'École des Chartes* (ib., 1893).

DAUPHIN. The chief town in the District of Dauphin, Manitoba, Canada, on Vermilion River and the Canadian Northern Railway, 178 miles northwest of Winnipeg by rail (Map: Manitoba, C 2). Among the principal buildings are the opera house, collegiate institute, and hospital. It is situated in a grain-growing district and possesses four grain elevators. The manufacturing establishments include flour and saw mills, machine works, a creamery, sash and door factories and a mineral-water factory. Good fishing is to be had in Lakes Dauphin and Winnipegosis, and good hunting in the Riding Mountain Forest Reserve. The town owns its electric-light system and water works. Pop., 1911, 2815.

DAUPHINÉ, dō'fē'nā'. Formerly a frontier province in the southeast of France, comprising the present departments of Drôme, Isère, and Hautes-Alpes. After the fall of the Roman Empire Dauphiné formed the southernmost part of the Kingdom of Burgundy. It then passed under the dominion of the Franks, and after the dismemberment of the Carolingian monarchy it became a portion of the new Burgundian Kingdom of Arles. It then passed into the possession of the German Emperor in 1032, and remained united with Germany till the middle of the fourteenth century, when it was presented to France by the last of the lords of Dauphiné. Governed for a century as a separate state, by the heir to the French throne, it was finally incorporated with France. During the Civil Wars Dauphiné was the stronghold of Protestantism and the scene of many bloody conflicts, in which the Huguenots gained the upper hand. The old rulers of the land bore the title of Dauphin (q.v.), and the name was afterward transferred to the district. Consult Chariot, *Histoire générale du Dauphiné* (Valence, 1883), and Chénavas, *La Révolution de 1788 en Dauphiné* (Grenoble, 1888).

DAURAT, dō'rā', or DORAT, JEAN, Latin name AURATUS (c.1500-88). A French poet, born and educated at Limoges. He was appointed preceptor of the pages at the court of Francis I, who took a deep interest in him; became director of the College at Coqueret, and in 1560 was appointed professor of Greek in the Royal College in Paris. He was called the "modern Pindar" and ranked among the "Pleïades," or seven great poets of the age. Report makes him the first organizer of a theatrical *cloaque*. His numerous odes and epigrams, written in Latin and published in 1586, do not justify the high estimation in which he was held in the sixteenth century. Consult Marty-Labeaux in *Pleïade française* (Paris, 1875).

DAUTHENDEY, dou'ten-di', MAX (1867-). A German poet, born in Würzburg. As a young man he traveled first in Denmark and Sweden, then in Mexico (1897) and Greece (1898), and after extensive travels in North America and in the near and far East, returned to Europe, to live first in Paris and then in Würzburg. He wrote a romance, *Josa Gerth* (1893), but was more successful with his dramas and lyrics, which with occasional affectation and extravagant mannerism are yet vivid, passionate, and beautiful in diction and metre. Among his plays are: *Frau Raufenbarth* (1905); *Em Schatten fiel über den Tisch* (1907; played in Cologne in 1912); *Maja* (1908); *Die Spielereien einer Kaiserin* (1910; played successfully in Berlin, Munich, Vienna, etc.), which dramatized Catharine I of Russia; *Der Drache Grauls* (1911). Even more characteristic of his mannered and traveled muse are his volumes of verse: *Reliquien* (1895); *Die Ammenballade* (1903); *Der Venusinenreime: Schalkhafttherosische Liebesmär* (1904); *Singsangbuch* (1906); *Lieder der langen Nächte* (1908); *Weltspek* (1909); *Die Geflügelte Erde* (1910), which he called "a song of love and wonder about the seven seas" and, like his *Lingam: Asiatische Novellen* and *Die acht Gesichter am Buaosee*, was distinctly exotic. There is much autobiographical material in his book, *Der Geist meines Vaters* (Munich, 1912), and in *Gedankengut aus meinen Wanderjahren* (ib., 1914).

DAUTZENBERG, dou'tsen-bērk, JOHANN MICHAEL (1808-69). A Flemish poet, born at Heerlen, Netherlands. He is known chiefly through his *Volksleesboek* (with Duyse, 1854), his valuable writings on prosody, and his introduction of foreign metres into Dutch poetry, a task in which he succeeded despite the numerous difficulties presented. His valuable poetic works, which include a translation of the *Odes of Horace*, were published at Brussels in 1850, under the title of *Gedichten*. Those written after 1850 were collected by Frans de Cort (q.v.), his son-in-law, in the volume entitled *Verspreide en nagelatene gedichten* (2d ed., 1875). Among his other works are: *Verhalen uit de geschiedenis van België* (1853; 3d ed., 1867). Dautzenberg exercised a most favorable influence upon the development of Flemish poetry and at the same time advocated a closer union with the German.

D'AUVERGNE, HENRI DE LATOUR. See TURENNE.

DAUW, dā. A local name in South Africa for Burchell's zebra, also called by the Dutch there "bonte quagga" and by the Bechuanaas "peteis." See ZEBRA.

DÁVALOS, dá'válōs, or DE ÁVALOS, GIL RAMÍREZ (c.1506-61). A Spanish soldier, born at Baeza in Castile. He accompanied Antonio de Mendoza to Peru, served as Corregidor of Cuzco, and, after the revolt of Girón, succeeded his brother, Egidio Ramírez Dávalos, as Governor of Quijós (the Land of Cinnamon) on the river Naho. He founded Cuenca (1557) and several other towns, which are now abandoned.

DAVENANT, dā'v'e-nant, SIR WILLIAM (1606-1668). An English poet and playwright. He was born at Oxford, where his father kept the Crown Inn. When only 10 years old, the precocious boy composed, on the occasion of Shakespeare's death, an ode to the memory of the great dramatist, and afterward was accustomed to claim that he was, in fact, Shake-

spears's son. In 1628 he began to write for the stage, and nine years after, on the death of Ben Jonson, he was appointed poet laureate. The next year he became manager of the Cockpit, a theatre in Drury Lane; but, entering into the intrigues of the Civil War, he was apprehended. He finally escaped, however, to France, and, returning, distinguished himself so much in the cause of the Royalists that he was knighted by Charles after the battle of Gloucester. Davenant a second time got into difficulties, and was confined in the Tower for two years, when he was released, as is said, on the intercession of Milton. There he continued his epic poem *Gondibert*, begun in France. Once more set free, he set about establishing a theatre. Obtaining at first permission to give dramatic performances at private houses, he reopened the Cockpit in 1658. After the Restoration he was favored by royal patronage, and continued to write and superintend the performance of plays until his death. Davenant was one of the most popular playwrights of his time. Though none of his plays rank high as literature, they seem to have been suitable to the stage. He made some curious adaptations of Shakespeare's plays: e.g., of *Measure for Measure* and, aided by Dryden, of *The Tempest*. In 1656 he introduced opera on the English stage and women to play the female rôles. His epic has some interest in that it was written in a stanza afterward employed by Gray in his famous *Elegy*. Consult Davenant's plays, with memoir, ed. by Laing and Maidment (5 vols., Edinburgh, 1872-74). Two representative plays, *Love and Honor* and *The Siege of Rhodes*, were edited by Tupper, and published in New York (1909).

DAVENPORT. An important manufacturing city and the county seat of Scott Co., Iowa, on the west bank of the Mississippi River, 330 miles above St. Louis, Mo., and opposite Rock Island, Ill., with which it is connected by two bridges—an iron railway and carriage bridge, built at a cost of \$1,200,000, and an iron railway bridge, which cost \$800,000 (Map, Iowa, G 3). It is 183 miles by rail west by south of Chicago and is on the Chicago, Rock Island, and Pacific, the Chicago, Milwaukee, and St. Paul, the Chicago, Burlington, and Quincy, the Davenport, Rock Island, and Northwestern, the Iowa and Illinois, the Davenport and Muscatine, and the Rock Island Southern railroads. River packets from St. Louis to St. Paul afford additional transportation facilities. Davenport is situated on the slope of a steep bluff and commands an extensive view. On Rock Island, which is crossed by the great bridge, are the United States arsenal and military headquarters and other government buildings. The city has several fine parks, a large public library, Academy of Natural Sciences, St. Luke's, Mercy, and other hospitals, numerous public and parochial schools, two opera houses, and many other notable buildings, and is the seat of the Academy of the Immaculate Conception, St. Ambrose College, St. Katherine's Hall, and the State Orphan Home. It is an episcopal see of the Protestant Episcopal church and of the Roman Catholic church. The city is in a rich agricultural and coal-mining region, ships large amounts of farm produce, and has extensive manufactures of washing machines, macaroni, locomotives, steel cars, carriages, agricultural implements, machinery, lumber, flour, woolen goods, cordage, gluecase and its products,

pottery, cigars, buttons, beer, soap, etc. Founded in 1835 by a company headed by Col. George Davenport. Davenport was incorporated as a town in 1838 and as a city in 1851. The Chicago and Rock Island Railroad was completed in 1854. The government is conducted by a mayor, elected every two years, and a city council, composed of the executive and aldermen, chosen by wards and on a general ticket. The annual income of the city amounted, in 1912, to \$1,367,000, expenditure to \$1,279,000; the principal items of expense being: police department, \$53,000, fire department, \$81,000; schools, \$243,000. Pop., 1890, 26,872; 1900, 35,254; 1910, 43,028; 1914 (U. S. est.), 46,340.

DAVENPORT, CHARLES BENEDICT (1868-). An American zoologist, born at Stamford, Conn. He graduated at the Brooklyn Polytechnic Institute in 1886, at Harvard in 1889, and took the degree of Ph.D. at the latter place in 1892. In 1888 he began to teach at Harvard, where he was instructor in zoology until 1899. In 1904 he became director of the station for experimental evolution at Cold Spring Harbor, L. I., and in 1889-1904 was assistant professor of zoology at the University of Chicago. In 1906 he was president of the American Society of Naturalists. His works include: *Observations on Budding in Paludicella and Some Other Bryozoa* (1891); *On Urnatella gracilis* (1893); *Experimental Morphology* (1897-99), *Statistical Methods, with Special Reference to Biological Variation* (1899; 2d ed., 1904); *Introduction to Zoology*, with Gertrude Crotty Davenport (1900); *Inheritance in Poultry*, Carnegie Institution Publication, No. 52 (Washington, 1906); *Inheritance of Characteristics in Domestic Fowl*, Carnegie Institution Publication, No. 121 (Washington, 1909); *Heredity of Skin-Color in Negro-White Crosses*, Carnegie Institution Publication, No. 188 (1913); *Heredity in Relation to Eugenics* (1913). He contributed to the first edition of the NEW INTERNATIONAL ENCYCLOPEDIA.

DAVENPORT, EDWARD LOOMIS (1816-77). An American actor. He was born in Boston, Mass., and made his first appearance in Providence, R. I., playing a minor part in *Sir Giles Overreach*, with the elder Booth as Sir Giles. Davenport made rapid progress and was soon recognized as a leading artist in tragedy, comedy, and melodrama. He supported Mrs. Mowatt (Ritchie) in a wide range of characters and accompanied her, about 1847, to England, where he also played with Macready and other stars. There, too, in 1849, he married Miss Fanny Vining, an actress, whom he later introduced to the American stage. She died in 1891. Returning in 1854, he traveled over the United States, playing in the principal cities, chiefly in Shakespearean characters and those drawn from Dickens's novels. At different times he was manager of the Howard Athenæum, in Boston, and other theatres. Among his latest conspicuous representations were such widely divergent characters as Brutus in *Julius Cæsar* and Bill Sikes in *Oliver Twist*. His renderings of the part of Sir Giles and of Hamlet were also especially admired. Davenport was highly esteemed for his genial and open-hearted manners. He died at his summer home in Canton, Pa. Consult Edwards, in Matthews and Hutton, *Actors and Actresses of Great Britain and the United States*, vol. iv (New York, 1886), and Montrose J. Moses, *Famous Actor-Families in America* (New York, 1906).

DAVENPORT, EUGENE (1856-). An American educator and agriculturist, born at Woodland, Mich., and educated at Michigan Agricultural College (B.S., 1878). In the Michigan Experiment Station he was assistant botanist in 1888-89 and then superintendent of the farm and professor of practical agriculture. In 1891-92 he was president of the *Collegio Agronomico* of São Paulo, Brazil. He became dean of the College of Agriculture in the University of Illinois in 1895 and, in addition, director of the Experiment Station and professor of thremmatology in 1896. In Illinois he did particularly important work in investigations on animal breeding. He wrote: *Principles of Breeding* (1907); *Education for Efficiency* (1909); *Domesticated Animals and Plants* (1910).

DAVENPORT, FANNY LILY GIPSY (1850-98). A well-known American actress, the daughter of Edward Loomis Davenport. She was born in London, England, but was brought to America when a child and was educated in the Boston public schools. When seven years old she appeared at the Howard Athenæum in Boston, as the child of Metamora, but her real début was at Niblo's Garden in February, 1862, as King of Spain in *Faint Heart Never Won Fair Lady*. This was followed by a season in soubrette parts in the South. While playing at the Arch Street Theatre, Philadelphia, under the management of Mrs. John Drew, she attracted the attention of Augustine Daly, who promptly gave her a place in his Fifth Avenue Theatre in 1869. Afterward she visited the principal towns and cities of the United States as a star in a wide variety of rôles in both comedy and tragedy. Among her greatest successes were those won in Sardou's *Fédora* (1883), *La Tosca* (1888), and *Cleopatra* (1890). In 1897 she produced *The Soldier of France*, a play with Jeanne d'Arc as the heroine. It was a failure, and the chagrin of that is thought to have hastened her final illness. She appeared on the stage for the last time at the Grand Opera House, Chicago, March 25, 1908. Her death occurred at Duxbury, Mass. She was the wife of Mr. Willet Melbourne MacDowell, her second husband, whom she married in 1889. Consult Benton, in McKay and Wingate, *Famous American Actors of To-Day* (New York, 1896), and Montrose J. Moses, *Famous Actor-Families in America*, (ib., 1906).

DAVENPORT, HOMER CALVIN (1867-1912). An American caricaturist. He was born in Silverton, Oreg., received but little education, and never attended an art school. He early became acquainted with the cartoons of Nast, which impressed him deeply, and after being in turn a jockey, a clown, and a printer's devil, he was employed as a cartoonist on the *San Francisco Chronicle*. He attracted the attention of William Randolph Hearst, who brought him to New York in 1895 and employed him on the *Evening Journal*. He had a wide range of subjects, but is best known for his political cartoons. He originated the brutal giant figures of the Trusts and the dollar-marked suit of Senator Hanna, and took an active part in molding public opinion during the silver campaign of 1896, the Spanish-American War, the McKinley and Roosevelt campaigns of 1900, 1904, and 1908. His famous Roosevelt cartoon "He's good enough for me" was drawn in 1904. Though his lack of technical training is sometimes apparent in the crudeness of his draftsmanship, his cartoons are remarkable for their

simplicity, force, and stern satire. His figure of "Uncle Sam" is one of the best ever produced. In 1906 he visited Arabia and drew the only picture ever made of the Sultan of Turkey. He is the author of *The Belle of Silverton and other Stories*, *The Dollar or the Man* (1900), and *The Diary of a Country Boy* (1910).

DAVENPORT, JOHN (1597-1670). An eminent Puritan clergyman, one of the founders of the New Haven Colony in Connecticut. He was born in Coventry, England; studied at Oxford University from 1613 to 1615; acted for about a year as chaplain at Hilton Castle, near Durham; and from 1616 to 1633 was a preacher in London. In 1625 he passed the examinations at Oxford for the degrees of B.D. and M.A. He came into conflict with the ecclesiastical officers, especially with Archbishop Laud on account of his nonconforming tendencies, and in 1633 withdrew from the Established church and removed to Amsterdam, Holland, whence he returned, however, in 1636, after engaging in a controversy with the Dutch classis on the subject of indiscriminate or promiscuous baptism of infants. In 1637, eluding the authorities, he embarked for Massachusetts, whose charter he had assisted in obtaining in 1629, and in June arrived at Boston, where he remained for nine months, during which time he took a prominent part in the famous Ecclesiastical Synod at Cambridge. He cooperated with Theophilus Eaton (q.v.) in founding the Colony of New Haven in April, 1636, and here, as minister and as one of the "seven pillars" of the civil government, he exercised a powerful influence. In 1661 he concealed the regicides Goffe and Whalley (qq.v.) for more than a month in his own house. He opposed the union of the New Haven and Connecticut colonies, which was effected in 1665, and three years later accepted a call to succeed John Wilson, the original pastor, as pastor of the First Church in Boston. Part of the congregation, who opposed his views on the "half-way covenant," seceded and organized the famous Old South Church. He was one of the editors of the works of Dr. John Preston, leader of the Puritan party in England, and published a number of volumes, including: *Discourse About Civil Government in a New Plantation, Whose Design is Religion* (1663); *The Knowledge of Christ Indispensably Required of All Men that Would Be Saved* (1653); *The Power of Congregational Churches Asserted and Vindicated* (1672); *The Saints' Anchor-Hold* (1661); and (with William Hooke) *A Catechism Containing the Chief Heads of Christian Religion* (1659). Consult "A Sketch of the Life and Writings of John Davenport," by Dexter, in the *Papers of the New Haven Colony Historical Society*, vol. ii (New Haven, 1877).

DAVENPORT, WILLIAM EDWARDS (1862-). An American social worker, born at North Stamford, Conn. He was educated at Brooklyn Polytechnic Institute, was from 1881 to 1896 a clerk in the New York post office, and then for three years he studied in Union Theological Seminary. In 1901 he founded the Brooklyn Italian Settlement, which in 1910 was consolidated with other organizations to form the United Neighborhood Guild. He was foreign correspondent in 1902, 1904, and 1909 for the *New York Evening Post* and the *Brooklyn Daily Eagle*. He came to be regarded as an authority on questions relating to Italian immigration. His publications include: *The New Dispensa-*

tion (1884); *Visions of the City* (1884); *The Perpetual Fire* (1886); *Beecher: An Ode* (1891); *The Praise of Plymouth* (1892); *The Poet and his Friends* (1893); *Poetical Sermons* (1896, 1897); *The Beggar Man of Brooklyn Heights* (1904); *More Outcries from Brooklyn Hollow* (1905).

DAVENPORT BROTHERS, THE. The name of two Americans professing to be spiritualistic mediums who flourished between 1845 and 1865. They performed a number of remarkable feats which gained them many followers, but were finally exposed as impostors. See SPIRITUALISM.

DAVID (Heb., beloved). A king of Judah and Israel (c.1033-993 B.C.). He was the youngest son of Jesse, a Judean, dwelling in Bethlehem. His family was one of the principal ones in the town. The number of Jesse's sons is given by later tradition as seven (1 Chron. ii. 13-15), but as eight in 1 Sam. xvii. 12. The chronology of David's reign is very doubtful, but the traditional date, 1055-1015 B.C., is generally regarded as somewhat too early. It may not be necessary, however, to reduce it more than about 20 years. The duration of his reign is fixed at 40 years (1 Kings ii. 11); but this number, being a round one, is viewed by some scholars with suspicion. David is not referred to in any early documents outside of the Bible. The biblical account is found in (1) 1 Sam. xvi. 1 Kings ii and (2) in 1 Chron. ii, iii, and xxix. Of these two sources the first alone can lay claim to historical value. The second, in so far as it is not based on the other (see CHRONICLES), must be used with great caution, and its statements are, as a general thing, to be discarded as unhistorical or untrustworthy, while the picture that it gives of the King, differing considerably from that found in the books of Samuel, is an idealized David, such as he had become by the end of the third century B.C. in the mind of a pious Jew. Coming to the narrative in Samuel and Kings, great difficulties confront the student, due largely to the composite character of the historical documents and in part to the corrupt state of the text. The existence of "doublets," i.e., two accounts of the same event, in the story of David is believed sufficient to show that in the Book of Samuel different documents have been pieced together. Thus we have two accounts of David's introduction to Saul (1 Sam. xvi. 19-23 and xvii. 1-xviii. 5); of the slaying of Goliath (1 Sam. xvii. 1-xviii. 5 and 2 Sam. xxi. 19); of Saul's throwing a spear at David (1 Sam. xviii. 10-11 and xv. 9-10); and more of the same sort. All these doublets, however, are limited to the First Book of Samuel, and from the ninth chapter of the Second Book of Samuel to the end of the twentieth chapter we have a continuous narrative, which is brought to a close in the first two chapters of 1 Kings. Chapters xxi to xxiv of the Second Book of Samuel again represent an addition of a composite character like the first eight chapters of the First Book of Samuel, and in addition to these we have a number of editorial additions and interpolations, of which the two principal ones are 2 Sam. viii. 1-15 and 1 Kings ii. 1-12. Of these authorities, the most authentic, according to many interpreters, is the long, continuous narrative in 2 Sam. ix-xx. This excellent piece of historic writing is regarded by a number of scholars as coming from a contemporary; and Klostermann has adduced many reasons, not

altogether lacking in plausibility, for his view that the author was Ahimaaz, the son of Zadok. The date of the other sections is supposed to be much later. They reveal a tendency to idealize David, which becomes more pronounced as the popular hero recedes into the background of history and becomes a favorite subject for romance, legend, poetical embellishment, and eventually the type of the ideal king and religious poet. In consequence, it is often difficult to pick out the genuinely historical incidents in David's career. Thus the story of David's encounter with the giant Goliath is believed to be a piece of romance (1 Sam. xvii-xviii) and the genuine account of Goliath's death to be found in 2 Sam. xxi. 19, where we learn that Elhanan was the slayer. Similarly, the stories of the friendship of David and Jonathan are romantic, though based on historical facts. On the other hand, there is no reason to question that he acquired musical skill, which, together with his personal charm and the indications that he gave of becoming valorous in war, attracted Saul to him and led to his entering into close relations with the "melancholy" King. He becomes Saul's armor-bearer and among the personal services that he renders is to be reckoned his soothing the King by achievements in minstrelsy. His success in the wars against the Philistines increases his popularity with King and people, and he becomes the son-in-law of the King by marrying Michal.

Soon after, however, a momentous change ensues. Saul, subject to fits of brooding, becomes jealous of David's popularity and entertains suspicion of the latter's fidelity. The story of his actually hurling a javelin at David may be a romantic touch, but it is certain that Saul's jealousy eventually led to David's banishment from the court. David now becomes a freebooter and gathers a retinue of brave but reckless warriors about him. With them he leads the life of a Bedouin chief, attacking defenseless landowners and hiring his services in attacks upon Amalekites (q.v.), and other tribes in the Negeb. The exact course of his wanderings during this period can no longer be followed. After first trying his fortunes at Nob, he is obliged to seek refuge from Saul at Adullam. We find him next in the wild and desert country south of Judaea, and he passes at times as far east as the Dead Sea, but after taking up his abode for a time at Engedi, Saul's pursuit drives him to Gath, where he offers his services to Achish, King of the Philistines, in an expedition against Amalekites, Ashurites, and other desert tribes. In reward for his services he obtains the town of Ziklag as a possession. Achish prepares an attack upon the Israelites and calls upon David to join him. The latter consents, but yielding to the protests of his chief men, who feared treachery on David's part, Achish compels David to depart. Upon reaching Ziklag he finds that the Amalekites had raided the town during his absence. In his pursuit he surprises the Amalekites and routs them. At this moment the tidings reach David of the death of Saul and his three eldest sons at Gilboa in an encounter with the Philistines. The opportunity had now come for David's return to his native country. He secures the favor of the inhabitants of Hebron and the surrounding district and is anointed King in Hebron, while still retaining Ziklag. Meanwhile Israel passes into the hands of Ishbaal, Saul's youngest son, who, however, was entirely a tool of Abner, the ambitious and

powerful general. Ishbaal foolishly alienates Abner's interest by reproaching him for taking one of Saul's concubines to himself, an act which may have indicated Abner's intention to seize the throne for himself. Abner enters into secret communication with David, but during a visit to him is murdered by Joab, David's great general. Soon afterward Ishbaal is murdered, and David, being recognized as the natural leader of all Israel, is solemnly anointed King of the whole people at Hebron by an assembly of the elders of the tribes. He is said to have been 37 years old at this time. Seven years, according to the biblical account, had passed since the death of Saul. The accounts of David's reign are quite fragmentary except for occurrences in his immediate family. We learn of successive wars against Moabites, Ammonites, Edomites, Philistines, and Arameans, and, while the accounts of his exploits are portrayed perhaps in too vivid colors, there is no doubt that he succeeded in firmly establishing the independence of Israel and in extending his power to a number of neighboring nations that were incorporated in the empire or made tributary. Of great importance was his selection of Jebus, which becomes known henceforth under its old name, Jerusalem, as the capital of his dominion. He also laid the foundation for its future significance as the centre of the Yahwe cult by removing the sacred ark to this city. After securing peace from his enemies David had to quell opposition which arose in his own household. His eldest son, Amnon, outraged his half-sister Tamar, and in revenge Absalom caused Amnon to be murdered. Subsequently Absalom organized a rebellion against his father, which obliged the King to leave Jerusalem for a time. The uprising is quelled, but not until Absalom has fallen as a victim. Amasa, David's nephew, who had taken part in the rebellion, but had been pardoned by David and promised the chief command in place of Joab, also falls a sacrifice to the latter's jealousy. Once more, as the King stands on the verge of the grave, serious trouble threatens regarding the question of succession. The court was divided between two candidates—Adonijah, the surviving eldest son, and Solomon, the son of David by Bathsheba. Through the influence of the prophet Nathan the King decides in favor of Solomon. David dies at an advanced age and is buried in his capital. These family troubles are looked upon by the Jewish writers as a punishment for David's adulterous act with Bathsheba and his subsequent connivance at the murder of Bathsheba's husband, Uriah. There is no doubt that this act, which took place during the war with the Ammonites, is the most serious charge to be brought against him, and there is no reason to question its authenticity, since it is fully in keeping with the conditions that prevailed at the time. In forming an estimate of David those conditions must be taken into consideration, and no true picture can be obtained of him unless we are willing to recognize his human limitations. That he was a great warrior admits of no doubt. Indeed, he was essentially a soldier, courageous and of boundless energy. He possessed the faculty, moreover, to an extraordinary degree, of gathering men to himself, and as a natural-born leader he overcomes obstacles that would have crushed others. But he also shows traits of cruelty in the treatment of his enemies, connives at treachery, and is willing to make use of underhand measures to accom-

plish his ends. The best evidence of the virility and resourcefulness of his character is the empire he founded. He united under his sceptre Judah and Israel, the tribes of the Negeb (q.v.), Edom, Moab, and Ammon, while the Aramean tribes, Zoba, Beth Rechob, and Beth Maacah, were made tributary. Thus he became the most powerful ruler in southern Syria. His moral sense was not strong, and it is probably due to this defect that he shows such lamentable weakness in dealing with his family affairs. But, with all his faults, he remains one of the most notable figures in Hebrew history, and it is not surprising that the attachment to him should have led to the idealization of him by popular tradition, evidenced by later writers. That he was a poet as well as a musician cannot be doubted. His authorship of the Elegy over Saul and Jonathan (2 Sam. i. 17-27) is generally admitted; and this alone would prove his right to be remembered as "the sweet singer of Israel" (2 Sam. xxiii. 1). But the Psalms, of which 73 are by Jewish tradition ascribed to him, do not belong to his age. They reflect in all but a few cases the religious thought and aspirations of postexilic Judaism. See PSALMS, BOOK OF.

Consult: Klostermann, *Die Bucher Samuels und der Konige* (1887); Cheyne, *Aids to Devout Study of Criticism* (1892); id., "David," in *Encyclopaedia Biblica* (1899); Stähelin, *Leben Davids* (1866); Dieulafoy, *Le Roi David* (1897); Beer, *Saul, David, Salomo* (1906); Baentsch, *David und sein Zeitalter* (1907); Winckler, *Geschichte Israels*, ii. (1900); Ed. Meyer, *Die Israeliten und ihre Nachbarstämme* (1907); Kittel, *Geschichte des Volkes Israel*, ii. (2d ed., 1909); Wellhausen, *Israelitische und jüdische Geschichte* (7th ed., 1914).

DAVID. A favorite subject with the sculptors of the Italian Renaissance, in which the youthful Israelitish shepherd is represented either with sling in hand, or holding Goliath's sword, with his foot upon the giant's head. The most important representations of the subject are the bronzes by Donatello and Verrocchio and the colossal marble statue carved by Michelangelo, which are described in the articles on these sculptors.

DAVID I (1084-1153). King of Scotland from 1124 to 1153. He was the youngest son of Malcolm Canmore by his wife, St. Margaret (q.v.). During the fierce struggle for the possession of the Scottish crown which followed the death of his father in 1093, the youthful David found refuge in England, together with his sister Eadgyth, or Matilda, who in 1100 married Henry I, King of England. The residence of David at the English court would appear to have been prolonged for several years, and the assertion of William of Malmesbury may well be credited that "it freed him from the rust of Scottish barbarity." In 1107 his elder brother, Alexander, succeeded to the throne, and David became Prince of Cumbria (q.v.). Together with this great principality he seems to have held lands in Lothian; and by his marriage, in 1113, with Matilda, widow of the Earl of Northampton, he acquired possession of that earldom too. In 1124 he succeeded his brother as King. In 1127 he took an oath, with the other great barons of England, to maintain the rights of his niece, Matilda, as heiress to the English crown, should her father, Henry I, die without male issue. The event thus contemplated came to pass in 1135, and when Stephen mounted the

English throne David took up arms in behalf of Matilda. Peace was restored by the grant of the earldom of Huntingdon and the promise of the earldom of Northumberland to David's son, Henry, then in his twentieth year; but the war was soon resumed, and in 1138 the King of the Scots, deserted by Bruce and others of his Anglo-Norman vassals, was signally defeated in the battle of "the Standard," near Northallerton. In the next year a second peace was concluded between the two kings, when the promised earldom of Northumberland was bestowed on Prince Henry. In 1140 the Scottish King marched into England for the third time to assert the rights of Matilda. He was again defeated and only regained his own country with difficulty.

The rest of his reign was devoted to the introduction of English civilization into Scotland, a task which had been begun by his parents and continued by his brothers, King Edgar and King Alexander. He secured the peace and safety of the country by building castles, and by erecting burghs he promoted trade, shipping, and manufactures. He showed his favor for learning by endowing many bishoprics and monasteries. David died at Carlisle on May 24, 1153. His son Henry had died in the previous June, and he was succeeded by his grandson, Malcolm. The remains of David's legislation, including the interesting code of the *Leges Burgorum*, have been carefully collected in the first volume of *The Acts of the Parliament of Scotland* (Edinburgh, 1844). Consult Robertson, *Scotland under her Early Kings* (2 vols., Edinburgh, 1862), and Skene, *Celtic Scotland* (3 vols., Edinburgh, 1876-80).

DAVID II. See under BRUCE, ROBERT.

DAVID, da'vâd', ARMAND (1826-1900). A French missionary and naturalist, born at Espelette, Basses-Pyrénées. In 1848 he entered the congregation of the Lazarists and in 1862 went as a missionary to China. Here he made valuable collections of animals, plants, and minerals, which he presented to the Museum of Paris. From 1869 to 1871, on behalf of the museum, he made scientific explorations in China and Tibet, discovering many new genera and species of flora and fauna. Subsequently he accomplished a third journey, of which he wrote in the *Journal de mon troisième voyage d'exploration dans l'empire chinois* (2 vols., with maps, 1875). The results of his previous travels are to be found in the *Nouvelles Archives du Muséum d'Histoire Naturelle* (1866, 1868-70). His *Les oiseaux de la Chine* (with 24 plates, 1877) is an important work.

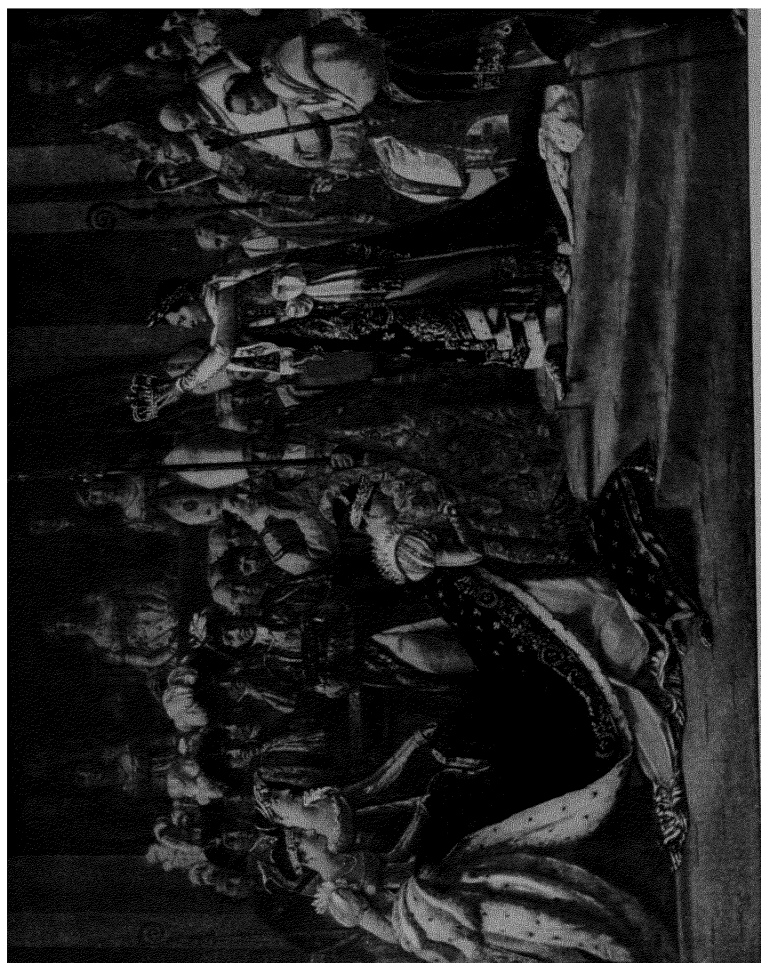
DAVID, CHRISTIAN (1690-1751). A Moravian missionary, born at Sentfleben, Dec. 31, 1690. Brought up a Roman Catholic, he embraced Lutheran views and then Moravian (1717) and founded the Moravian colony of Herrnhut (1722) and was elected the first of the 12 elders. Henceforth he was a missionary in Europe and even went to Greenland, where he founded the first mission (1747). Consult Thompson, *Moravian Missions* (New York, 1882). See MORAVIANS.

DAVID, da'vêt, EDWARD. A Flemish buccaner of the latter part of the seventeenth century. He early became one of the "Brethren of the Coast," as the West Indian pirates styled themselves, achieved prominence in that organization, and in 1683 sailed as leader of an expedition of three ships for the Pacific. Reinforced by French filibusters with two vessels and a fire

ship, he devastated the coasts of Chile and Peru. A fleet of three galleons and two fire ships was sent against him by the Viceroy of Peru, but after an indecisive battle he succeeded in making his escape. Subsequently he returned to the coast of Peru, pillaging towns, slaughtering, and exacting ransoms in true piratical fashion. He then transferred his depredations to Central America and Mexico. In 1688, under a general amnesty granted by King James II, he betook himself to England, where he lived for many years in undisturbed possession of his plunder.

DAVID, da'vâd', FÉLICIEN CÉSAR (1810-76). A distinguished French composer. He was born at Cadenet, Vaucluse, April 13, 1810. At first a chorister and later chapelmaster in the cathedral at Aix, he entered at 20 the Paris Conservatory, where he studied with Benoist (organ), Fétis (composition), and Reber (harmony). His uncle cut off his paltry monthly allowance of 50 francs, and David had to give lessons. He joined the Saint-Simonists, but their commune broke up at Ménil-Montant in 1833; with a number of fellow dreamers he went to the East—Turkey, Egypt, and Syria. After two years of hardship and suffering he returned to France, rich in novel experiences. The fruit of his journeys, *Mémoires orientales*, received scant notice, and David retired for more serious study and composition, but his first symphony (1838) had a like fate. In 1844 his "symphonic ode," *Le désert*, was performed at the Conservatory amid tumults of applause, which continued day after day at the successive performances of the work. His next productions, the oratorio *Moussé au Sinaï* (1846), the symphonic ode *Christophe Colomb* (1847), and the mystery *L'Eden* (1848), had little success. But he was now a recognized master; even his earliest compositions found a hearing, and the doors of every theatre were open for his new works, chiefly operas. *La perle du Brésil* (1851) was received with acclamation, and a national prize of 20,000 francs was awarded (in 1867) to his *Herculeanum*, produced at the Grand Opéra in 1850. *Laila Roukh* (1862) was equally successful, but *Le Saphir* (1865) found less favor. *La captive* was withdrawn by the composer before it was performed. In 1862 he was appointed an officer of the Legion of Honor, and in 1869 elected to succeed Berlioz at the Institute and as a librarian of the Conservatoire de Musique in Paris. His compositions include also chamber music, songs, and pieces for solo instruments. David, the "musical Orientalist," occupies a singular position in the history of music: he inaugurated a new movement. During his long years of wandering in the East he absorbed the quaint and weird Oriental melodies, and to express these in the most gorgeous orchestral colors that a rich fancy could think of was his task. It was the easier as Berlioz (q.v.) had already worked out orchestral effects that glowed and blazed, and it remained only to give them an Oriental setting, which David did in *Le désert* and subsequent works. His followers were numerous, and among them the most famous—Bizet (*Djamileh*; *Les pêcheurs de perles*), Massenet (*Roi de Lahore*), and Delibes (*Lakmé*)—were the most directly influenced. He died at Saint-Germain-en-Laye, Aug. 29, 1876. Consult A. Azevedo, *Félicien David* (Paris, 1863), and R. Brancour, *Félicien David* (ib., 1908).

DAVID, da'vêt, FERDINAND (1810-73). A German violinist, born in Hamburg, June 19,



DAVID
THE CORONATION OF JOSEPHINE, FROM THE PAINTING IN THE LOUVRE, PARIS



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He was born in Paris, Aug. 30, 1748. On the advice of Boucher (q.v.), who greatly influenced his early art, he studied under Vien and entered the schools of the Academy. In 1774 he took the first Prix de Rome with "Antiochus and Stratonice" (Ecole des Beaux-Arts, Paris) and went to Rome with Vien shortly after. A five years' sojourn devoted to the diligent study of classic antiquity brought about a complete change in style, which he himself compares to an operation for cataract. Returning to Paris in 1780, he achieved celebrity with "Blind Belsharius Asking Alms" (1781, Lille Museum) and "Andromache Bemoaning the Corpse of Hector" (Ecole des Beaux-Arts), which caused his election to the Academy.

More than any other painter of his time, David, with his classical tendencies, represented the spirit of the age—the reaction against the frivolity of monarchical France and the return to the stern virtues of antiquity. His "Oath of the Horatii" (1784) and "Brutus Condemning his Sons to Death" (1789, both in the Louvre) were hailed with universal applause. Entering politics he became the great painter of the Revolution and presented to the Convention, of which he was a leading spirit, the "Deathbed of Lepelletier," the first martyr of liberty. When Marat was killed, he was called by the Assembly to memorialize his death, and he responded with a painting in which the murdered man is portrayed with great naturalistic strength. Twice imprisoned during the Revolution, he narrowly escaped the guillotine and renounced politics. Those of his works which represent what he himself lived and experienced are painted in this manner. The same is true of his portraits of the Revolutionary epoch, like those of Madame Récamier (Louvre), of Barrère, and especially of the young Bonaparte, whose follower he became (Versailles), etc. When Napoleon became Emperor, he was appointed court painter. His chief masterpiece in this capacity was the colossal picture of the "Coronation of Napoleon I" (finished 1807, and now at Versailles). This is a stately composition, noble in color, and with a tender, quivering light, justifying Muther's encomium of being the best historical painting of the past century. His portraits of this period, as, e.g., those of the Emperor, the Pope, and Murat, are all of the highest naturalistic merit. Upon the restoration of the Bourbons he was exiled to Brussels, where he died on the 29th of December, 1825. During his exile he painted nothing of real merit except his portraits, which include the double likenesses of the daughter of Joseph Bonaparte (Toulon Museum), Abbé Sicéys, and the "Three Ladies of Ghent" (Louvre), all depicted with keen realism and great pictorial strength. All of these works show a realistic talent of the first order, with high powers as a draftsman and a colorist.

But the best known and most influential side of David's art is his large canvases representing antique subjects. While these paintings show great excellence of drawing, they are cold in composition and color, exaggerated and theatrical in action. Besides those mentioned above, the "Death of Socrates," "Leonidas at Thermopylae" (1814, Louvre), the "Rape of the Sabines" (1799, Louvre), are among the chief of this class. These were the works which had the greatest influence upon the pupils of his large atelier. Throughout the Revolution and under

the Empire he was the supreme dictator of art in France, and his influence upon its development was very great. While he rescued it from the trivialities of the followers of Watteau, he established a despotism of classicism which had to be broken before there could be real progress. Nevertheless, he was in a way the regenerator of modern French art, and the accuracy of his drawing exercised a salutary influence upon its development.

Consult: the monographs by Thomé (Paris, 1826); Coupin (ib., 1827); Lenoir (ib., 1835); Thoré (Brussels, 1843); De Villars (Paris, 1850); Delécluze (ib., 1855); Blanc (ib., 1860); Chesneau (ib., 1862); Jules David (ib., 1880); Saumier (ib., 1904); Rosenthal (ib., 1905); Muther, *History of Modern Painting*, vol. ii (London, 1907).

DAVID, dā'vĕt, JOHANNES BAPTISTA (1801-66). A Flemish philologist, born at Liege. For more than 30 years he held the chair of Belgian history and Flemish literature at the Catholic University of Louvain. He was one of the greatest Flemish scholars of the century and a very prolific writer. His principal work is the famous *Vaderlandsche historie* (10 vols., 1842-64; 4th ed., 1885 et seq.), a history of Belgium which was never completed. The most important of his linguistic works is entitled *Eerste beginselen der nederdutsche spraakkunst* (10th ed., 1858).

DAVID, dā'vĕd', LAURENT OLIVIER (1840-). A Canadian journalist and statesman, born at Sault au Recollet, Quebec Province. He was educated at the College of Sainte Thérèse, and was called to the bar in 1864. From 1870 to 1884 he was editor of *L'Opinion Publique*, but the paper was discontinued owing to his criticisms of the Catholic clergy for alleged political interference in elections. At different times he was also connected with *Le Bien Public* and *La Tribune*. He was for a short period a translator for the House of Commons, but resigned in 1878 and practiced his profession in Montreal, of which he was appointed city clerk in 1892. Originally a Conservative in politics, he afterward joined the Liberals, and was a member of the Quebec Legislature during 1886-90. In 1887-88 he was president of the Saint Jean Baptiste Society of Montreal. He did much to promote a patriotic national spirit among French-Canadians, though without favoring revolutionary and separatist projects. In 1888 he was a delegate to the French-Canadian National Convention at Nashua, N. H.; in 1898 he assisted in preparing a new city charter for Montreal; and in 1903 he was appointed to the Senate. His writings are distinguished for lucidity and beauty of style. His publications include: *Biographies and Portraits* (1876); *Les héros de Chateauguay* (1883); *Les patriotes de 1837-38* (1884); *Mes contemporains* (1894); *Les deux Papineau* (1896); *Le clergé canadien: sa mission et son œuvre* (1896), a work which reproves certain Roman Catholics for intervention in political affairs and was condemned by the Congregation of the Index at Rome; *L'Union des deux Canadas, 1841-1867* (1898); *Le drapeau de Carillon*, a drama (1901); *Laurier et son temps* (1905); *Vingt biographies* (1910); *Souvenirs et biographies* (1910). See CANADIAN LITERATURE.

DAVID, or DEWI, SAINT (?-1601). The patron saint of Wales. He was, according to tradition (probably worthless), the grandson of

Ceredig, King of Cardiganshire. He was educated by monks and later went through Wales on a preaching tour. He also founded monasteries, especially that one at Menevia, now called St. David's, in Pembrokeshire, and there he became abbot, which office was equivalent to bishop, and its holder was so designated. As bishop, he presided at the synods of Brei and "Victory." His shrine became a favorite place of pilgrimage, and he was canonized in 1120; his festival is held on March 1. He was celebrated for his eloquence and success in conversion. Several works have been ascribed to him, but these are no longer extant. His life was written by Rice, Bishop of St. David's, who died about the year 1090, reprinted in W. J. Rees, *Lives of the Cambro-British Saints of the Fifth and Immediately Succeeding Centuries* (London, 1853). Consult Rice Rees, *An Essay on the Welsh Saints* (ib., 1836).

DAVID AP GWILYM, *dā'vəd' ap gwē'lim* (c.1300-70). The greatest of mediæval Welsh poets. He was born either in Cardiganshire or Glamorganshire, and was the son of Gwilymsam. He was a man of considerable education, and his knowledge of Latin and Italian literatures has given rise to the belief that he was educated in Italy. His tendency to satirize his neighbors, as well as his numerous love affairs, brought him into frequent difficulties. He has been compared to Shakespeare, Burns, Ovid, and Petrarca, and addressed to Morrydd, who may be called his Laura, more than 147 poems that form a kind of *ars amandi*. Morrydd was the daughter of Madog Lawgain, and her marriage to a wealthy suitor was soon followed by her elopement with the poet. They are said to have escaped to France, but a lawsuit was brought against David by the outraged husband, to whom damages were adjudged in a large sum. Unable to pay it, the poet might have languished in prison had not the people of Glamorgan generously remitted the obligation. In gratitude for this the poet dedicated two of his principal poems to Glamorgan. Most of his poems were written in the metre called *cynydd*, consisting of seven-syllable lines rhyming in couplets. His frequent use of this metre led his contemporaries to call him *Dafydd gwydd gwin*, 'David of the sweet wine cwydd.' Because of the lustre that he gave to this verse, it has become the most frequent genre used by Welsh poets from his time to the present day. Though love forms the main theme of his poems, he is probably better known for his treatment of nature, for which he shows a love that is unequaled in any literature of that period. Two hundred and sixty-two of his poems were edited by Owen Jones (*Myfyr*) and William Owen Pughe (London, 1789), and more have been lately discovered in the Mostyn Library and British Museum. An admirable English version of the poems was published by Arthur James Jones (1834). Consult L. C. Stern, "Dafydd ab Gwilym," in the *Zeitschrift für celtische Philologie*, vol. vii, pp. 1-265 (Halle, 1910). See WELSH LITERATURE.

DAVID CITY. A city and the county seat of Butler Co., Neb., 90 miles (direct) west of Omaha; on the Union Pacific, the Burlington and Missouri River, and the Chicago and Northwestern railroads (Map: Nebraska, G 3). The city contains a public library, park, and Chautauqua grounds. It is the centre of an agricultural and stock-raising region and has manu-

factories of bricks. The water works and electric-light plant are owned by the city. Pop., 1900, 1845; 1910, 2177.

DAVID COPPERFIELD. A novel by Dickens, published serially, beginning May, 1849. It was the author's favorite book and is said to be partly autobiographical.

DAVID D'ANGERS, *dā'vəd' dān'zhā'*, properly **PIERRE JEAN DAVID**, so called to distinguish him from David the painter (1788-1856). A French sculptor of the early nineteenth century. He was born at Angers March 12, 1788, the son of a wood carver. Overcoming his father's opposition, he went to Paris in 1808. After a bitter struggle with poverty he entered, in 1810, the atelier of the sculptor Rolland, at the same time studying drawing with Jacques Louis David, who befriended him. The Prix de Rome enabled him to spend five years (1811-16) in the Eternal City, where he came under Canova's influence, without, however, relinquishing his naturalism. He then studied the Parthenon statues in London, and on his return to Paris he received his first important commission. This was the monument to Le Grand Condé, now in the Court of Honor, Versailles. During the revolution of 1830 David, an ardent Republican, fought in the ranks, and after its successful termination he received the commission for his masterpiece—the sculptures of the pediment of the Panthéon. Under the inscription, "Aux grands hommes la patrie reconnaissant," "France" bestows crowns, placed in her hand by "Liberty," upon her illustrious sons, among whom the figures of Mirabeau, Carnot, David the painter, Voltaire, Rousseau, Bonaparte, and the "Trumpeter of Arcola" are prominent. He participated also in the revolution of 1848 and was a member of the Constituent Assembly. After the coup d'état by Napoleon III he went into exile to Greece, but soon returned, broken in health, to France. He died in Paris, Jan. 5, 1856. His patriotism and ideal devotion to the cause of liberty were only equalled by a lovable character, which endeared him to all classes of men.

David D'Angers is an epoch-making figure in the history of French sculpture. Notwithstanding his classical training, which is often evident in his work, he rendered nature with freedom and truth. He is most eminent in portrait sculpture, in which he was the first to insist upon contemporary costume; but he also excelled in reliefs and especially in medallions. He has left behind no less than 55 statues, 150 busts, 70 bas-reliefs, 20 statuettes, and over 500 medallions. He is represented in the national collections of the Louvre, Versailles, and Sèvres, in almost all the important provincial museums, and in his native town there is a museum devoted entirely to his works. His two most important works, besides the pediment of the Panthéon, are the tomb of General Gobert (Père Lachaise), and his "Philopœmen" (Louvre), a colossal heroic type in classic garb. Among the best of his portrait statues are those of Gutenberg at Strassburg, Talma at Montpellier, Cornille at Rouen, Fénelon at Cambrai, Lafayette and Thomas Jefferson at Washington. He himself most prized his statue of "Barra," a drummer boy killed in the war of La Vendée, and the beautiful Greek female figure of the monument to the Greek hero Marco Bozzaris. In his portrait busts and medallions he has left us faithful and characteristic likenesses of most of the French celebrities of his day, and of many Eng-

lish and German notables, which he modeled during repeated visits to these countries. Among his principal busts are those of Goethe (Ducal library, Weimar), the sculptor Rauch, Washington, etc.; among the medallions are those of Napoleon and Madame David. Consult the monographs by Maillard (Angers, 1839); Lomenie (Paris, 1844); Saint-Amour (Dunkerque, 1845); Halévy (ib., 1857); Karcher (London, 1865); Jouin (Paris, 1878). Consult also Brownell, *History of French Art* (New York, 1892), and Gonse, *La sculpture française depuis le XIV^e siècle* (Paris, 1895).

DAVIDEIS, da-vid'e-is. A sacred poem on the troubles of David, the chief work of Cowley, published in 1656.

DAVID GARRICK. A comedy by Robertson, which appeared in 1864 and is a translation from the French play *Sullran*. It purports to represent amatory incidents in the life of the famous eighteenth-century English actor and was first produced at the Haymarket with the elder Sothorn in the principal rôle.

DAVIDGE, WILLIAM PLEATER (1814-88). An English comedian, who came to the United States in 1850 and became identified with the American stage. He was born April 17, 1814, in London, and appeared as a youthful amateur at Drury Lane in *The Miller's Maid*. Afterward he acted in various English cities, especially in Manchester. His first appearance in America was in August, 1850, as Sir Peter Teazle at the old Broadway Theatre, New York, later he supported many well-known actors in the metropolis and elsewhere, among them Edwin Forrest and Fanny Davenport. Some of his notable parts were Caliban: Eccles, in *Caste*; Dick Deadeye, which he created, in *Pinafore*; Old Hardy, in *The Belle's Stratagem*; and Hardcastle, in *She Stoops to Conquer*. His last engagement was with the Madison Square Company, beginning in 1885. He died at Cheyenne, Wyo., Aug. 7, 1888. He was the author of a volume of autobiographical reminiscences called *Footlight Flashes* (New York, 1866). *The Drama Defended* (ib., 1859): and other works.

His son, WILLIAM DAVIDGE (1847-1899), also an actor, was born at Manchester, England, and brought to the United States when a child of three years. During his career he played with William H. Crane (1870-71), Kate Claxton (1877-78), and later for several seasons with Roland Reed. He died in Chicago.

DAVID HARUM. A very popular story by Edward Noyes Westcott, which, after rejection by a number of publishers, attained a remarkable success. The character of the shrewd, horse-trading David Harum is distinctively an American type, and was drawn from an original who was a resident of the town of Homer, N. Y. An identification of the characters and scenes has been published by Arthur T. Vance, under the title *The Real David Harum* (New York, 1901).

DAVIDISTS. A name used for three Christian sects: 1. Followers of David of Dinant, a teacher in the University of Paris, whose philosophical work was condemned by the Synod of Paris in 1209, and who, in consequence of the ban laid upon him in 1215 by the Pope, had to flee from France. The place and date of his death are unknown. His fundamental idea was that the Deity alone had any real existence, being the *materia prima* of all things. 2. Davidists, or David Georgians, followers of David

George, or Joris, a native of Ghent or Bruges. In 1530 he was whipped, had his tongue bored, and was imprisoned for obstructing a Roman Catholic procession. He founded a sect of his own and in 1542 published his *Book of Wonders*, retelling the visions which he professed to have received. After his death his body was dug up and burned by order of the Senate of Basel, where he had passed the latter part of his life as a merchant under an assumed name, John of Bruges. The sect, under the leadership of Henry Nicholas, became known in Holland and England as the "Familists." They interpreted the whole of Scripture allegorically, and maintained that, as Moses had taught hope and Christ had taught faith, it was their mission to teach love, the service of which was the highest and best of the dispensations. The result was an extreme Antinomianism in practice, which attracted the notice of the authorities in both countries. Early in the seventeenth century the sect was suppressed or absorbed by others. See JORIS, DAVID. 3. The followers of Francis David, who in 1568 began a widespread Unitarian movement in Hungary. See UNITARIANISM.

DAVIDOFF, dā've-dōf, KARL (1838-89). A Russian violoncellist, born at Goldingen, Courland, March 17, 1838. He was educated at the Moscow University and studied the violoncello under H. Schmitt in Moscow and Schubert in St. Petersburg. He then entered the Leipzig Conservatory, where he continued to study the 'cello under F. Grützacher, and also completed a course in composition under Hauptmann. He first appeared at the Gewandhaus, Leipzig, in 1859, and was made first violoncellist in the Gewandhaus orchestra and professor in the Leipzig Conservatory. In 1862 he was appointed solo violoncellist to the Emperor of Russia and professor in the Conservatory of St. Petersburg and was director of the latter from 1876 to 1887. As a virtuoso, he was equalled by few, and won great fame on his concert tours through Europe. Besides four concertos and a number of minor pieces for his instrument, he composed some works for orchestra, pianoforte pieces, and songs. Consult W. Hutor, *Karl Davidoff und seine Art das Violoncell zu behandeln* (Leipzig, 1899).

DAVIDS, THOMAS WILLIAM RHYS (1843-). An English Orientalist. He was born at Colchester, was educated at the University of Breslau, entered the civil service in Ceylon, and filled various judicial appointments in that island. He was called to the bar of the Middle Temple in 1877, and was professor of Pali and Buddhist literature at University College, London, from 1882 until 1912. In 1904 he became professor of comparative religion at Manchester. He devoted himself especially to the study of Buddhism. His works include: *Buddhism: A Sketch of the Life and Teachings of Gautama, the Buddha* (1878; 22d ed., 1910); a translation from the *Jātakas*, or *Buddhist Birth Stories*, vol. 1 (1880); *Buddhism: Its History and Literature* (1896, composed from American lectures); *Buddhist India* (1902; 2d ed., 1905); *Early Buddhism* (1908); *Dialogues of the Buddha* (1899; 1910); and with J. E. Carpenter, he edited the Pali text *Digha-nikāya* (3 vols., London, 1890-1911). He was made president of the Pali Text Society, which he founded in 1882.

DAVID'S DEER. See ELAPHURE.

DAVIDS ISLAND. An island lying in Long

Island Sound, off New Rochelle, N. Y., the nearest railway station, a quarter of a mile north of the boundary between Greater New York and Westchester County (Map: New York City and Vicinity, G 2). It is owned and occupied by the United States government, and is the site of Fort Slocum (q.v.), a recruit depot of the United States army, for which extensive barracks and other buildings are maintained. Its extent is about 100 acres.

DAVIDSON. A town in Mecklenburg Co., N. C., 22 miles north of Charlotte, on the Southern Railway (Map: North Carolina, B 2). It has cotton and cottonseed-oil mills, a ginny, and a flouring mill. The town is the seat of Davidson College (q.v.), founded in 1837, and of the North Carolina Medical College, established about 1890, connected with which is the Munroe Private Hospital. There is also a Carnegie library. Pop., 1890, 481; 1900, 904; 1910, 1056.

DAVIDSON, ANDREW BRUCE (1831-1902). A Scottish biblical scholar. He was born in Aberdeenshire and, after studying at Aberdeen, in 1863 was ordained and was appointed professor of Oriental languages in New College, Edinburgh. He was a member of the Old Testament Revision Committee, being recognized as the foremost British biblical critic of his day. George Adam Smith and W. Robertson Smith were among his pupils. His publications include a *Commentary on Job*, vol. i (1862); *An Introductory Hebrew Grammar* (1874; 9th ed., 1888); primers on *Job*, *Ezekiel*, *Hebrews* (1877); "Isaiah," in *The Temple Bible* (1902); and two volumes of sermons, *The Called of God* (1903) and *Waiting upon God* (1904), with a life by Taylor Innes.

DAVIDSON, CHARLES (1862-). An American scholar. He was born in Streetsboro, Ohio, and was educated at Iowa College and at Yale University. In 1893-94 he was assistant professor of English at Indiana University, in 1894-96, associate professor of English at Adelbert College (Western Reserve University), and in 1906-11 professor of education at the University of Maine. He wrote much for scholarly reviews and these books: *Studies in the English Mystery Plays* (1892); *Motor Work and Formal Studies* (1911).

DAVIDSON, GEORGE (1825-1911). An American astronomer. He was born in Nottingham, England, but went to the United States in 1832. He did notable work on the Government Coast and Geodetic Survey (1845-95), but it was in astronomical research that he gained his greatest distinction. He traveled on every continent to make observations, particularly of transits of Venus. He wrote: *The Alaska Boundary* (1903); *The Glaciers of Alaska* (1904); *The Discovery of San Francisco Bay* (1907); *Francis Drake on the Northwest Coast of America* (1908); *Origin and Meaning of the Name California* (1910). In 1895 he became professor of geography in the University of California.

DAVIDSON, JAMES WOOD (1829-1905). An American author, born in Newberry District, S. C. He became professor of Greek in South Carolina College, then principal of the high school at Columbia, and, during the Civil War, adjutant of infantry in Jackson's corps of Lee's army. He was literary editor of the *New York Evening Post* (1873), and American correspondent of the London *Standard* from 1873 to 1878. His published works include: *The Living*

Writers of the South (1869); *School History of South Carolina* (1869; rev. ed., 1894); *The Correspondent* (1886); *The Poetry of the Future* (1888); *The Florida of To-Day* (1889).

DAVIDSON, JOHN (1857-1909). An English poet. He was born at Barhead, near Glasgow, Scotland; at the age of 13 became assistant in the chemical laboratory of a sugarhouse at Greenock, attended for a short time Edinburgh University, and went to London in 1890. He had already published three plays—*Brue* (1886); *Smith: A Tragic Farce* (1888); and *Scaramouch in Nawos* (1889)—which contain many striking scenes. His later plays include *Godfrida* (1898) and *Self's the Man* (1901). In 1901 he began the issue of a series of verse pamphlets called *Testaments*, of which have appeared "A Vivisection," "A Man Forbid," and "An Empire Builder." He came to repudiate entirely the past in art, literature, morals, and religion. His philosophy, partly derived from Schopenhauer, is thoroughly pessimistic. In man he sees matter striving through brutal effort towards self-knowledge. Hence his defense of vivisection. He is best known by his ballads, individual in subject and style. His thought and manner are well represented by *Making of a Poet*, *Houndsditch*, and the ballads of "Heaven" and "Hell," in *Ballads and Songs* (1894). Other volumes are *Fleet Street Eclogue* (1st series, 1893; 2d series, 1895); *New Ballads* (1896); *The Last Ballad and Other Poems* (1898); *Testaments* (1901-02); *The Knight of the Maypole* (1902); *A Rosary* (1903); *The Testament of a Prime Minister* (1904); *Selected Poems* (1904); *The Theocrat* (1905); *Holiday and Other Poems* (1906); *Mammon and his Message* (1908); *The Man Forbid and Other Essays* (1910). For critical analysis of his work, consult Archer, *Poets of the Younger Generation* (London and New York, 1902).

DAVIDSON, JOHN WYNN (1824-81). An American soldier. He was born in Fairfax Co., Va., graduated at West Point, and was assigned as second lieutenant of dragoons in 1845, and during the Mexican War was with the Army of the West at San Pasqual, the passage of the San Gabriel River, and at Mesa. In 1848 he was promoted to be first lieutenant and was assigned to frontier duty. From 1861 to 1862 he served in the defenses of Washington, D. C., and in the latter year, with rank of major of cavalry, fought in the Army of the Potomac during the Peninsular campaign, becoming brigadier general of volunteers in 1862. He was brevetted colonel after the battle of Golding's Farm (Va.) and in 1865 major general in both the regular and volunteer services. In 1863 he commanded a cavalry division at Brownsville (Ark.) and Ashley's Mills (Ark.) and in the capture of Bayou Metre (Ark.). He was appointed in 1864 chief of cavalry of the division west of the Mississippi and in 1866 became lieutenant colonel of the Tenth United States Cavalry. From 1873 to 1881 he was in command of various posts in the Indian Territory, Texas, and Montana, and in 1879 became colonel of the Second Cavalry.

DAVIDSON, LUCRETIA MARIA (1808-25). An American poet, remarkable for her precocity in rhyming. Many of her pieces were lost or destroyed, but nearly 300 were collected and published by S. F. B. Morse under the title *Amir Khan and Other Poems* (1829). Her sis-

ter, **MARGARET MILLER DAVIDSON** (1823-38), was also a precocious writer, and at the age of 10 composed a drama called the *Tragedy of Aletia*. Washington Irving was her patron and supervised the publication of the two sisters' works (1850).

DAVIDSON, RANDALL THOMAS (1848-). A British prelate, Archbishop of Canterbury, born in Edinburgh and educated at Harrow and at Trinity College, Oxford. He was curate of Dartford, Kent, in 1874-77; private secretary and chaplain to Archbishop Tait, whose daughter he married, and (1882-83) to Archbishop Benson; dean of Windsor and domestic chaplain (1883-91) to Queen Victoria, clerk of the closet (1891-1903) to Queen Victoria and to King Edward; and Bishop of Rochester in 1891-95 and of Winchester in 1895-1903. In 1903 he succeeded Temple as Archbishop of Canterbury. He helped to draft the unsuccessful Compromise Education Bill of 1908 and in the same year presided at the Pan-Anglican Congress and the Lambeth Conference. He edited in 1889 *The Lambeth Conferences of 1867, 1878, and 1888*. By 1904 he had visited the United States and Canada. He wrote: *A Life of Archbishop Tait* (1891; with Benham); *The Christian Opportunity* (1904). *Captains and Comrades of the Faith* (1911).

DAVIDSON, SAMUEL (1806-98). An Irish biblical critic. He was born at Kellswater and was educated at the Royal College of Belfast, where he became professor of biblical criticism in 1835 after being ordained to the Presbyterian ministry. He entered the Presbyterian ministry and in 1835 was given the chair of biblical criticism in the Royal College of Belfast. Soon afterward he became a Congregationalist, and in 1842 he took the chair of biblical literature and Oriental languages in the Lancashire Independent College at Manchester, which he was forced to resign in 1857. He was one of the Old Testament Revision Committee. His principal works are: *Sacred Hermeneutics* (1843); *Text of the Old Testament Considered, with a Treatise on Sacred Interpretation* (1856), written for Horne's *Introduction; The Canon of the Bible* (1877); *The Doctrine of Last Things Contained in the New Testament* (1882). He translated Furst's *Hebrew and Chaldean Lexicon to the Old Testament* (1867; often reprinted) and Gieseler's *Ecclesiastical History* (1846).

DAVIDSON, THOMAS (1817-85). An English geologist and paleontologist, born in Edinburgh. He studied on the Continent and at Edinburgh University, made extensive geological tours, and at the suggestion of Leopold von Buch, the German geologist, undertook the study of the Brachiopoda. In 1851-70 he published, under the direction of the Paleontographical Society, his *Monograph on British Brachiopoda* (3 vols.), containing 250 plates drawn by himself. To this work he added (1873-85) three supplementary volumes. His *Memoir on Recent Brachiopoda* was posthumously published by the Linnean Society. In 1852 he was elected fellow of the Geological Society of London and in 1857 fellow of the Royal Society. His splendid collection of recent and fossil brachiopods, together with his books, he presented to the National Museum at South Kensington.

DAVIDSON, THOMAS (1840-1900). An American philosopher, born near Tetterangus, Scotland. He graduated in 1860 at the University of Aberdeen, removed in 1866 to Canada,

and in 1867 to the United States, and in 1875 settled at Cambridge, Mass., where he was active as scholar, author, and lecturer. A close student of Thomas Aquinas, he was invited by the Pope to assist the corps of Italian professors in the preparation of a new edition of the works of that philosopher. His *Philosophical System of Antonio Rosmini-Serbati* (1882) was the first introduction of the latter to English readers. For many years he conducted at Keene, in the Adirondacks, a "summer school for culture sciences," and from 1898 a class of Russian Jews in New York City. His personality was large and commanding. His published works include further: a translation of the fragments of Parmenides (1869) and one of Bleek's *Origin of Language* (1869); *A Short Account of the Niobe Group* (1874); *The Parthenon Frieze and Other Essays* (1882); *The Place of Art in Education* (1886); *Giordano Bruno* (1886); *Handbook to Dante* (1887); *Aristotle and Educational Ideals: A History of Education* (1900).

DAVIDSON, WILLIAM (1740-81). An American soldier. He was born in Lancaster Co., Pa., was taken when a child to North Carolina, and became a major in one of the first regiments raised in that State for the Revolutionary War. He was in the engagements at Brandywine, Germantown, and Monmouth, and advanced to the rank of a brigadier general of North Carolina militia. In the attempt to check the advance of Cornwallis over the Catawba River at Cowan's Ford, Feb. 1, 1781, he was killed. Davidson College, N. C., was named in his honor.

DAVIDSON COLLEGE. An institution for higher education established in 1837 at Davidson, N. C. The college was founded by members of the Presbyterian church and is at present governed by a board of trustees appointed by the presbyteries of North Carolina, South Carolina, Georgia, and Florida (Presbyterian church, South). No theological department, however, is maintained, and the degrees conferred are the academic ones in art and science. The student attendance in 1913 was 353, the endowment of the college was \$250,000, and the total value of the college property, \$360,000. The library contained 23,688 volumes. The president in 1914 was William Joseph Martin.

DAVID THE PHILOSOPHER (Arm. *David 'Imasdasar*), or **DAVID THE ARMENIAN** (7-c.500 A.D.). An Armenian scholar, born at Nerken in the Armenian Province of Durnperan. He studied in Greece and wrote learned translations of, and commentaries on, the works of Aristotle. Consult Neumann, *Mémoire sur la vie et les ouvrages de David* (Paris, 1829).

DAVIE, WILLIAM RICHARDSON (1756-1820). An American soldier, born in Egremont, England. He came to the United States in 1763, graduated at Princeton in 1776, studied law at Salisbury, N. C., and in 1779 received the commission of a lieutenant of dragoons. His troop was subsequently assigned to Count Pulaski's legion, in which he rose to the rank of major. He resumed the study of law at Salisbury and in 1779 was admitted to the bar of North Carolina. Under the authorization of that State in 1780 he raised at his own expense a troop of dragoons and two mounted infantry companies, with which to assist in the defense of the southwestern districts against British attacks from South Carolina. In 1780 he was promoted to

the command of the State cavalry, with the rank of colonel. At the entry of Lord Cornwallis into Charlotte, N. C., he distinguished himself by his spirited resistance to the repeated charges of Tarleton's famous legion. He was appointed in 1781 to the post of commissary general of the American army in the South. After the Revolution he became a successful lawyer, was a delegate to the Constitutional Convention of 1787, and for a number of years represented the borough of Halifax in the Lower House of the State Legislature. He drew up the Act, passed in 1789, for the establishment of the University of North Carolina; in 1794 was commissioned major general of militia; became Governor of North Carolina in 1799, but resigned in the same year to accept appointment to the embassy which concluded with the French government the Convention of Sept. 30, 1800. Consult the biography by Hubbard, in vol. xxv (Boston, 1848) of *The Library of American Biography*, edited by Jared Sparks. Consult *Peele's Lives of Distinguished North Carolinians* (1898).

DAVIES, ARTIUR B. (1862-). An American landscape, marine, and figure painter. He was born at Utica, N. Y., and studied under Dwight Williams at Utica, at the Art Institute, Chicago, and in New York, where he began as an illustrator for the magazines. His paintings first attracted attention at an exhibition held in New York in 1899, and after that time, avoiding the customary annual exhibitions, he held other important exhibitions in New York (1901), containing such paintings as "Spring's Renewal" and "The Breath of Light"; at the Pennsylvania Academy of Fine Arts (1908), including "The Girdle of Ares" (acquired by the Metropolitan Museum, New York, 1914), and "Visions of the Sea"; at the Art Institute of Chicago (1911), with subjects like "The Hunter of the Starlands" and "Maya, Mirror of Illusions," which last was purchased by the Institute. In public collections he is best represented in the Brooklyn Museum by four paintings, among which is the charming "Children of Yesteryear." Davies came to be recognized as one of the most original of American painters, and the most prominent representative of those Romantics who seek to escape from the commonplace into the realm of dreams. He has well been called a realist with the temperament of a mystic. He is a master of tonal effects and excels especially in color. He was the leader of the group of artists who organized the remarkably successful International Exhibition, held in New York in 1913, in which so-called Modernists were for the first time introduced to the American public. In his most recent works in the exhibition of Cubists and Futurists at the Montross Gallery, New York, in 1914, he showed pronounced cubist tendencies in a series of paintings, of which the most important was "The Great Mother." Consult Hunker, "Certain Painters," in *The Pathos of Distance* (New York, 1913).

DAVIES, BEN (1858-). An English tenor, born in Swansea, Wales. He studied under Randegger at the Royal Academy of Music (1880-83), where he won numerous prizes. Upon leaving the Academy he joined the Carl Rosa Opera Troupe, appearing in *Faust*, *The Bohemian Girl*, etc.; but he is best known as a concert and oratorio singer. He visited the United States in 1893, 1894, and 1905-06.

DAVIES, CHARLES (1798-1876). An American mathematician, born in Washington, Conn. He early removed to St. Lawrence Co., N. Y., and in 1815 graduated at West Point. In 1848 he took the chair of mathematics and natural philosophy in the University of New York, and in 1857 the chair of higher mathematics in Columbia College. His works include among many: *Surveying* (1832); *Trigonometry* (1840); *Elements of Algebra* (1844; rev. ed., 1901); *Logic of Mathematics* (1850); *Mathematical Dictionary and Cyclopaedia of Mathematical Science*, with W. G. Peck (1855); *New Elementary Algebra* (1859); *University Algebra* (2d ed., 1864); *Elements of Analytical Geometry and of the Differential and Integral Calculus* (new ed., 1901); *The Complete Arithmetic* (1877). He also edited, in English, Legendre's *Geometry* (1828), and Bourdon's *Algebra* (1832).

DAVIES, HENRY EUGENE, JR. (1836-94). An American soldier, born in New York. He was educated at Harvard, Williams, and Columbia, and was admitted to the bar in 1857. At the outbreak of the Civil War he entered the United States Volunteers as captain, and became brigadier general in September, 1863. He served with distinction in the Cavalry Corps, Army of the Potomac, became one of Sheridan's most trusted lieutenants, and by 1865 had risen to the rank of major general of volunteers. He resigned in 1866 and afterward became a prominent New York lawyer and held several public offices. He was the author of *General Sheridan* (1895), in the "Great Commander Series."

DAVIES, HUBERT HENRY. A British dramatist, born at Woodley, Cheshire, England. He went to San Francisco in 1893, where he was employed as a journalist and in the production of vaudeville sketches. In 1901 he returned to England. He is author of the following plays: *Cousin Kate* (1903); *Cynthia* (1904); *Captain Drew on Leave* (1905); *The Mollusc* (1907); *Lady Epping's Lawsuit* (1908); *Bevis* (1909); *A Single Man* (1910); *Mrs. Gorrings's Necklace* (1910); *Doormats* (1913).

DAVIES, JOHN, OF HEREFORD (c.1565-1618). An English poet, not to be confounded with Sir John Davies (q.v.). At Oxford and elsewhere he was famous as a writing master. He wrote many curious philosophical poems, epigrams, satires, and sonnets. Among these are: *Microcosmos* (1603); *Triumph of Death* (1605), descriptive of the plague; *Wit's Pilgrimage* (c. 1610), containing sonnets, etc.; *The Scourge of Folly* (c.1611), containing epigrams, etc., one of which is addressed to Shakespeare under the name "our English Terence"; and *The Muse's Sacrifice, or Divine Meditations* (1612). Consult *Complete Works*, ed. by Grosart (2 vols., Blackburn, 1873).

DAVIES, SIR JOHN (1569-1626). An English poet and statesman. He was born at Tisbury, Wiltshire, educated at Oxford, studied law at the Middle Temple, and was called to the bar in 1595. In 1603 he was sent by James I as Solicitor-General to Ireland. Three years later he became Attorney-General and was raised to the rank of sergeant at law. Elected to the Irish Parliament in 1613, he was chosen Speaker of the Lower House. The next year he took his seat in the English Parliament as member for Newcastle-under-Lyme. He died just after being nominated Chief Justice. Davies was a faithful public servant and a man of great talent

and learning. His two works connected with his Irish career are *A Discovery of the True Causes why Ireland was Never Subdued, etc.* (1612), and *Reports of Cases Adjudged in the King's Courts in Ireland* (1615) and several masterly state papers. As a poet, he belonged to a group of late Elizabethans who, in reaction from the earlier love poetry, turned to moral themes. In 1596 he published *Orchestra, or a Poem of Dancing*, in which he fancifully maintains that all motion is music; to him the heavens move in "spondees, solemn, grave, and low." Still more fanciful are his acrostics, called *Hymns to Astraea* (1599). The poem by which he is best known is *Nosce Teipsum* (1599). It is written in the four-line stanza, afterward employed by Davenant, Dryden, and Gray. Consult *Complete Works*, with memoir ed. by Grosart (3 vols., Blackburn, 1869-76).

DAVIES, SIR LOUIS HENRY (1845-). A Canadian statesman and jurist. He was born at Charlottetown, Prince Edward Island, was educated at Prince of Wales's College, Charlottetown, and in 1866 was called to the bar. In 1876 he became Premier and Attorney-General of Prince Edward Island, and he was returned as a Liberal to the Dominion House of Commons from 1882 to 1901. Before entering Dominion politics he was one of the British counsel before the International Fisheries Commission at Halifax in 1877. (See *FISHING LAWS*.) As counsel for the tenantry before the Prince Edward Island Land Commission in 1875-76, he did much to settle the land question of that province, and during his provincial premiership the Free Schools Act was passed. In 1896, upon the incoming of the Laurier administration, he was appointed Minister of Marine and Fisheries. The same year he was a delegate to Washington in behalf of trade reciprocity, and in 1897 he was a delegate to London in connection with the Bering Sea seal controversy, internal Canadian fisheries, and the Belgian and German trade treaties. In 1901 he was appointed a judge of the Supreme Court of Canada. In 1897 he was knighted.

DAVIES, SAMUEL (1724-61). An American clergyman and educator. He was born near Summit Ridge, Newcastle Co., Del., was educated at the seminary of the Rev. Samuel Blair, Fogg's Manor, Chester Co., Pa., and in 1746 was licensed to preach by the Newcastle Presbytery. In 1747 he was sent as an evangelist to Hanover Co., Va., where by 1748 he was conducting worship in seven churches. He later argued against Peyton Randolph, the Royal Attorney-General, before the General Court at Williamsburg, that the Act of Toleration extended to Virginia. In 1753, with Gilbert Tennent, he visited England to obtain funds for the College of New Jersey (now Princeton University), and at this time secured a ruling that Virginia was under the Act of Toleration. His sermon, "Religion and Patriotism," preached in Hanover County, 1755, refers to the martial spirit aroused by the French and Indian War, and he adds in a footnote: "As a remarkable instance of this, I may point out to the public that heroic youth, Colonel Washington, whom I cannot but hope Providence has hitherto preserved in so signal a manner for some important service to his country." In 1759 he succeeded Jonathan Edwards as president of the College of New Jersey. His collected sermons appeared in London in 1767-71. Consult the memoir by

Barnes in the *Complete Works* (New York, 1851). One or two of his hymns are still found in Presbyterian hymnals.

DAVIES, THOMAS (c.1712-85). A Scottish bookseller and author. He studied at the University of Edinburgh and was for several years (1736-85) on the stage; but having been ridiculed by Churchill in *The Rascals* he gave up acting and opened a bookshop in Covent Garden. It was here that in 1763 he introduced Boswell to Dr. Johnson, who was his intimate friend and to whom he dedicated his edition of the works of Massinger. He wrote a *Life of Garrick* (1780), which soon passed through four editions and brought him considerable money and repute, and *Dramatic Miscellanies* (3 vols., 1785).

DAVIES, THOMAS FREDERICK (1872-). An American bishop, born in Philadelphia. He was educated at Yale University and at General Theological Seminary, New York City. Ordained a deacon in 1897 and a priest in 1898 in the Protestant Episcopal church, he served in succession as assistant at the church of the Incarnation, New York (1897-1900), rector of Christ Church, Norwich, Conn. (1901-03), and rector of All Saint's Church, Worcester, Mass. (1903-11). In 1911 he was elected Bishop of Western Massachusetts.

DAVIES, T. WITTON (1851-). A British Baptist theologian and Orientalist, born in Nantyglo, Monmouth. He was educated in the Baptist colleges at Pontypool and Regent's Park and at University College, London, and took graduate courses at Berlin, Leipzig, and Strassburg. Subsequently he was pastor of a Baptist church in Merthyr Tydfil (1878-80); taught at Haverfordwest Baptist College until 1891; was principal of Midland College, Nottingham (1892-99); and taught Arabic and Syriac at University College, Nottingham (1897-99). At Bangor he was connected first with the department of Hebrew and Old Testament literature (1899-1906), and then with that of Semitic languages. Besides articles for theological periodicals and for reference books he wrote: *Oriental Studies in Great Britain* (1892); *Magic, Divination, and Demonology among the Hebrews* (1898); *The Scriptures of the Old Testament* (1900); *Henrich Ewald, Orientalist and Theologian* (1903); commentaries on "Psalms" (1906) and "Ezra, Nehemiah, and Esther" (1909), in the *Century Bible*, and on "Bel and the Dragon" (1913), in the *Oxford Apocrypha*.

DAVIESS, dā'vīs, JOSEPH HAMILTON (1774-1811). An American lawyer. He was born in Bedford Co., Va.; was taken to Kentucky by his parents when a child, was educated there, and soon became well known in the West for his eccentricities as well as for his skill as a lawyer. He was United States district attorney for Kentucky, and as such attempted to bring Aaron Burr (q.v.) to trial for treason (1806), but was unsuccessful and gained only personal unpopularity. Having entered the army, he fought as major under Gen. W. H. Harrison at Tippecanoe, where he was killed while leading a cavalry charge against the savages. Daviess married a sister of Chief Justice John Marshall.

DÁVILA, dā'vé-lá, or DE ÁVILA, ALONSO (c.1540-66). A Spanish soldier, born in the city of Mexico. In 1566 he was accused of

complicity in a plot to overturn the government and place Martín Cortés on the throne of New Spain. He was subsequently condemned and executed at Mexico. That he had any share in the plot, if such there were, is now considered extremely doubtful.

DAVILA, dâ'vé-lâ, ENRICO CATERINO (1576-1631). An Italian historian, born at Piove di Sacco, near Padua. His father was the constable of Cyprus and after the Turkish victories was obliged to take refuge in France, where Enrico was brought up as page to Henry III. Afterward he fought in the religious wars, distinguishing himself at Honfleur (1594) and Amiens (1597). Returning to Venice in 1599, he served as Governor in Candia, in Friuli, and in Dalmatia, and was murdered as Governor of Crema in 1631. His *Historia delle guerre civili di Francia* (Paris, 1644) has gone through 200 editions; Eng. trans. by Cotterell-Aylesbury (London, 1647). Consult biographies by A. Zeno (Venice, 1733), Ciscato (Vicenza, 1885), the article by Pavanello (Padova, 1892), and the *Discourse on Davila* by President John Adams (1805).

DÁVILA, GIL GONZÁLEZ. See GONZÁLEZ DÁVILA, or DE ÁVILA, GIL.

DÁVILA, PEDRARIAS. See PEDRARIAS DÁVILA.

DÁVILA Y PADILLA, dâ'vé-lâ é pâ-dé'lyâ, AGUSTÍN (1562-1604). A Mexican historian. He was born in the city of Mexico, where he entered the Dominican Order in 1579. He was friar of the Convent Puebla de los Angeles in Tlascala, and lecturer on philosophy and theology at the colleges of Puebla and Mexico. He was one of the chief officers of the highest chapter in his province, and in 1596 was sent as ambassador of the order to Rome and Madrid, where two years later he became court preacher. As a prominent officer of the Inquisition, he caused to be burned several hundred copies of a Spanish translation of the Bible which had been supplied with annotations by Protestants. He was one of the most zealous members of his order and also one of the most learned and eloquent, for which reason the title "Chronicle of the Indies" was bestowed upon him. His principal work, written by order of the government, was published under the respective titles: *Historia de la fundación de la provincia de Santiago de Méjico, de la orden de predicadores* (Madrid, 1596; 2d ed., Brussels, 1625), both these editions in quarto, and *Varia historia de la Nueva España y Florida* (Valladolid, 1634), in folio.

DAVIN, NICHOLAS FLOOD (1843-1901). A Canadian journalist and legislator. He was born at Kilfinane, County Limerick, Ireland, and was educated privately and at Queen's (now University) College, Cork. He studied law and was called to the bar at the Middle Temple, London, in 1868. Relinquishing law for journalism, he became a reporter in the House of Commons gallery, and subsequently was war correspondent for the *Irish Times* and the *London Standard* during the Franco-Prussian War, in which he was wounded. In 1872 he went to Toronto, Canada, and was successively an editorial writer on the *Globe* and the *Mail*. He was called to the Ontario bar in 1874 and afterward actively supported the Conservative protectionist policy which was successful in 1878. In 1883 he went to the Northwest and settled at Regina, where

he established and became editor of the *Leader*. In 1887 he was elected a member of the House of Commons, and in 1895 he strove unsuccessfully to pass a parliamentary resolution granting the franchise to women. He published: *The Irishman in Canada; Culture and Practical Power; Eos, an Epic of the Dawn; British vs. American Civilization; Ireland and the Empire; The Earl of Beaconsfield*.

DA VINCI, dâ-vên'ché, LEONARDO. See VINCI, LEONARDO DA.

DAVIOUD, dâ'vé'ou', GABRIEL JEAN ANTOINE (1823-81). A French architect. He was born in Paris and studied at the Ecole des Beaux-Arts where he carried off a number of prizes. He acquired great reputation, as inspector of gardens and public squares, by the important part he took in the embellishment of the Bois de Boulogne, the Champs Elysées, and various public squares (1850-62). He designed the Lyrique and Châtelet theatres, the magnificent Fontaine St. Michel, and, in collaboration with Bourdais, the Palace of the Trocadéro, for the World's Exposition in 1878. He published *Le bois de Boulogne architectural* (1860).

DAVIS. A town in Tucker Co., W. Va., 83 miles southwest of Cumberland, Md., on the Western Maryland Railroad and on the Black Water River (Map: West Virginia, E 3). It is in a productive timber and coal region and has a large tannery, a box factory, pulp and lumber mills. The water works are owned by the town. Pop., 1900, 2391; 1910, 2615.

DAVIS, ANDREW JACKSON (1826-1910). An American lecturer and writer on spiritualism, born in Orange Co., N. Y. His first book, *The Principles of Nature*, he dictated in 1845 after a trance of 16 hours, during which time he claimed to have received his inspiration from communion with inhabitants of the spirit world. Some of his other works are: *The Great Harmony* (6 vols., 1850-61), *The Penetrals* (1856); *The Magic Staff* (1857), an autobiography; *Arabula, or the Divine Guest* (1867); *Mental Diseases and Disorders of the Brain* (1871); *Autobiography* (1885). Most of his books are plentifully supplied with allusions to personal experiences with spirit revelation, which must be received without verification.

DAVIS, ARTHUR POWELL (1861-). An American civil engineer, born at Decatur, Ill. He graduated from the State Normal School at Emporia, Kans., and from Columbian (now George Washington) University in 1888. From 1884 to 1894, as topographer of the United States Geological Survey, he had charge of surveying and exploring expeditions in Arizona, New Mexico, and California; later, as hydrographer, he had charge for two years of all the government stream measurements, and he conducted the hydrographic examination of the Nicaragua and Panama canal routes (1898-1901). In 1906 he was appointed chief engineer of the United States Reclamation Service and in 1909 consulting engineer of the Panama Canal. Besides preparing numerous articles and bulletins, he published *Elevation and Stadial Tables* (1901).

DAVIS, BRADLEY MOORE (1871-). An American botanist, born in Chicago. After graduating from Leland Stanford Junior University, in 1892, he studied at Harvard, Bonn, and Naples. For 11 years he taught at the University of Chicago, from 1902 to 1906 as assistant professor of plant morphology; from

1897 to 1905 he also had charge of the botanical department of the Marine Biological Laboratory, Woods Hole, Mass., and there from 1904 to 1909 he was head of the botanical section of the biological survey of the Bureau of Fisheries. In 1911 he became assistant professor of botany at the University of Pennsylvania. He was secretary of the American Society of Naturalists in 1914. Besides special articles on the morphology and cytology of algae, fungi, and liverworts, and studies in the *Cenotheca*, he is co-author with Joseph Young Bergen of *Principles of Botany* (1906) and *Laboratory and Field Manual of Botany* (1907).

DAVIS, CHARLES HAROLD (1856-). An American landscape painter, born at Amesbury, Mass. He studied with Grondman in Boston, and afterward under Boulanger and Lefebvre at the Julian Academy in Paris. He lived 10 years in France and on his return, in 1890, took up his residence at Mystic, Conn. He obtained the Palmer prize for landscape at the Chicago Exposition of 1890, the \$2000 prize given by the American Art Association in 1887, and medals at Paris in 1900, at Buffalo in 1901, and at St. Louis in 1904. In 1906 he was elected to the National Academy of Design. Davis paints chiefly evening effects, and his landscapes are characterized by direct vision and simple workmanship. Among the more notable are: "The Brook," in the Philadelphia Academy; "Late Afternoon," at the Union League Club, in New York City; "Evening" and "August," in the Metropolitan Museum, New York; "The Deepening Shadows" (Corcoran Gallery, Washington); "Summer" (National Gallery, Washington); "Close of Day" and "Twilight" (Art Institute, Chicago); "Moonrise at Twilight" (Carnegie Institute, Pittsburgh); "Landscape" (Boston Art Museum).

DAVIS, CHARLES HENRY (1807-77). An American naval officer, born in Boston. He entered the navy in 1823 as midshipman and was stationed on different vessels and on the coast survey until 1861, when, with the rank of captain, he was a member of the board which examined the defenses of Southern ports. In the expedition against Port Royal, S. C. (q.v.), he was fleet captain and chief of staff. He became flag officer of the Mississippi flotilla early in 1862 and on May 10 engaged a Confederate fleet of eight ironclads (four of them rams) off Fort Pillow (q.v.). Later (June 6) he defeated the fleet decisively in an engagement near Memphis, captured or destroyed all but one of the vessels, and received also the surrender of Memphis. He then joined Farragut in the operations at Vicksburg. Davis attained the rank of rear admiral in 1863, and spent most of his remaining service as superintendent of the Naval Observatory at Washington, and commander of the Norfolk Navy Yard. He wrote: *The Law of Deposit of the Flood Tide: Its Geological Action and Office* (1852); *Memoir Upon the Geological Action of Tidal and Other Currents of the Ocean* (1849). He translated Gauss's *Theoria Motus Corporum Caelestium* (1858), and he was superintendent of the *American Nautical Almanac* in 1849-56 and 1859-61.

DAVIS, CHARLES HENRY (1845-). An American naval officer, born in Cambridge, Mass. Graduating from the United States Naval Academy in 1864, he rose through the grades to be captain in 1898 and rear admiral in 1904. Between 1897 and 1902 he was super-

intendent of the Naval Observatory, and he commanded the auxiliary cruiser *Diad* in 1898, the *Alabama* in 1902, and was a division commander of the battleship squadron in 1904-05. In 1904-05 also he was United States commissioner to the International Commission of Inquiry on the North Sea Incident. He was retired in 1907. He is author of *Chronometer Rates as Affected by Temperature and Other Causes* (1877), and a biography of his father, *Charles Henry Davis, Rear Admiral, 1807-1877* (1899).

DAVIS, CUSHMAN KELLOGG (1838-1900). An American statesman. He was born in Henderson, N. Y., graduated at the University of Michigan in 1857, studied law, and in the Civil War served in the Federal army until 1864. In 1867 he was a member of the Minnesota Legislature and from 1868 to 1873 was United States district attorney. In 1874-76 he was Governor of his State. In 1887 he was elected to the United States Senate. He succeeded John Sherman as chairman of the Committee on Foreign Relations in 1897 and in 1898 was appointed one of the United States commissioners to negotiate the Treaty of Paris terminating the Spanish-American War. His influence was important in securing the consent of the Senate to this treaty. He published *The Law in Shakespeare* (new ed., 1900).

DAVIS, DAVID (1815-86). An American jurist, born in Cecil Co., Md. He graduated at Kenyon College, Ohio, in 1832, and was admitted to the Illinois bar. He was afterward a member of the State Legislature and of the State Constitutional Convention of 1847, was a judge of the State Circuit Court from 1848 to 1862, and was a justice of the United States Supreme Court from 1862 to 1877. In 1872 he accepted the presidential nomination from the National Labor Reform party, but afterward withdrew his name. From 1877 to 1883 he was a United States Senator and succeeded Chester A. Arthur as President of that body, serving until 1883. In politics he was an independent, but usually acted with the Democratic party.

DAVIS, E. F. C. (1847-95). An American mechanical engineer, born at Chestertown, Md. (graduating from Washington College (Md.) in 1866. He served an apprenticeship in the hydraulic works of Brinton and Henderson, and after a few years was made superintendent of the Colliery Iron Works at Pottsville, Pa. Between 1878 and 1890 he was connected with the Philadelphia and Reading Coal and Iron Co., as mechanical draftsman, superintendent of the company's shops at Pottsville, Pa., and mechanical engineer in charge of all the shops and machinery of the corporation. In 1890 he became general manager of the Richmond Locomotive and Machine Works, and at the time of his death he was manager of the C. W. Hunt Company of New York. He was president (1895) of the American Society of Mechanical Engineers.

DAVIS, GEORGE BRECKENRIDGE (1847-1914). An American soldier, born at Ware, Mass. He served in the Civil War, graduated from the United States Military Academy in 1871, and was appointed major judge advocate in 1888. Continuing in his judicial office he was promoted through the grades to be brigadier general and judge-advocate-general in 1901 and in 1911 he was retired with the rank of major general. He received the degree of LL.B. from Columbian (now George Washington) University. He was a delegate to the Geneva Conference in 1906 and

to the Second Peace Conference at The Hague in 1907. His publications include: *Elements of International Law* (1887; 3d ed., 1908); *Elements of Law* (1897); *Military Law* (1898); *Military Laws of the United States* (1907; 3d ed., 1913); *The Second Peace Conference* (1907).

DAVIS, GEORGE ROYAL (1840-99). An American soldier and politician, born at Three Rivers, Mass., and educated at Williston Seminary. He served throughout the Civil War and rose to be colonel of the Third Rhode Island Volunteer Cavalry. He became a manufacturer in Chicago. From 1879 to 1885 he was a Republican member of Congress from Illinois, and in 1884 and 1888 was a delegate to the Republican National Convention. He was director general of the Columbian Exposition of 1893.

DAVIS, GEORGE WHITEFIELD (1839-). An American soldier, born at Thompson, Conn. He enlisted in the Eleventh Connecticut Infantry in 1861 and by 1865 had received the brevet rank of major of volunteers. He was commissioned captain in the Fourteenth United States Infantry in 1867 and retired in 1903 with the rank of major general. He became military governor of Porto Rico in 1899, provost marshal general of the Philippines in 1901, and commander of the Division of the Philippines in 1902. In 1900-03 he was manager and vice president of the Nicaragua Canal Construction Company. He was appointed a member of the Isthmian Canal Commission in 1904 and was Governor of the Canal Zone in 1904-05. In 1905-06 he was chairman of the Board of Consulting Engineers on the type of the canal. He wrote reports on the military governments of Porto Rico and Manila, and in 1904-06 was president of the board of publication of the official records of the Civil War.

DAVIS, HENRY GASSAWAY (1823-1916). An American capitalist and Democratic politician, born in Woodstock, Md. Having to become self-supporting in his teens, he worked on a plantation and then on the Baltimore and Ohio Railroad. He soon became largely interested in West Virginia lumber trade and coal mines and built the West Virginia Central and Pittsburgh Railway (which he sold in 1902 to the Wabash) and the Coal and Coke Railway of West Virginia. He was a power in the Democratic party in the State (as was his son-in-law S. B. Elkins in the Republican party) and served in the State Legislature (Lower House, 1865; Senate, 1868-71) and was United States Senator in 1871-83. In 1904 he was the Democratic nominee for the vice presidency of the United States. He gave from his great wealth to local charities and educational institutions.

DAVIS, HENRY WILLIAM BANKS (1833-1914). An English animal painter and sculptor. He was born at Finchley and studied at the Royal Academy and later for several years at Boulogne-sur-Mer. Davis is one of the most important British animal painters. The landscapes in his pictures represent either the French coast, central England, north Wales, or the Scottish Highlands. He paints in the style of the Barbizon masters, with much versatility of atmospheric treatment and delicate feeling. Among his best pictures are: "A Panic" (Font-hill House); "Summer Afternoon" (Sheffield Gallery); "Contentment" and "After Sundown" (National Gallery, London); "Return to the Stall" (Tate Gallery, London). He often

exhibited on the Continent, and was made a member of the Paris Société Nationale des Beaux-Arts. His sculptures, dating chiefly from his early period, include portrait busts and statues, and a "Galloping Bull," for which he was elected associate of the Royal Academy (1872).

DAVIS, HENRY WILLIAM CARLESS (1874-). An English historian. He was educated at Weymouth College and at Balliol College, Oxford, of which he was scholar in 1891-95 and became fellow in 1902 (after being fellow of All Souls from 1895 to 1902). Taking as his special field mediæval history, particularly Norman and Angevin England, he contributed to the *English Historical Review*, the *Cambridge Modern History*, the English edition of Helmoit, and Mowbray's *Dictionary of Church History* (1912); and he published a *History of Balliol College* (1899), *Charlemagne* (1900), *England under the Normans and Angevins* (1905), a manual on *Mediæval Europe* (1911), *Regesta Regum Anglo-Normannorum* (1913), and a new edition (1913) of Stubbs's *Select Chartes*.

DAVIS, HENRY WINTER (1817-65). An American legislator. He was born in Annapolis, Md., graduated at Kenyon College in 1837, and studied law at the University of Virginia. In 1850, after practicing for several years in Alexandria, he settled in Baltimore. He was a member of Congress from 1855 to 1861 and again from 1863 to 1865, first as a Whig, then as a Know-Nothing or American, and finally as a Republican, and made himself conspicuous by his devotion to the Union and his advocacy of the emancipation of the slaves. In 1860 he refused the offer of the vice-presidential nomination on the Republican ticket. During his latter term in Congress he was chairman of the Committee on Foreign Affairs. He published *The War of Ormuzd and Ahriman in the Nineteenth Century* (1853), an attack on the tenet that slavery was a divine institution. For the Wade-Davis Manifesto and Davis's attitude on reconstruction, see WADE, BENJAMIN F. His speeches, edited by Cresswell, were published in New York in 1867.

DAVIS, JAMES. See HALL, OWEN.

DAVIS, JEFF (1862-1913). An American lawyer and legislator, born in Little River Co., Ark. He graduated from the law department of Vanderbilt University in 1884, served as prosecuting attorney of the fifth judicial district of Arkansas (1892) and as attorney-general of Arkansas (1898), and made a record by being elected Governor of his native State for three consecutive terms (1901-1907). He served in the United States Senate from 1907 to 1913 and was reelected, but died at the beginning of his second term. Consult L. S. Dunaway, *Jeff Davis, Governor of Arkansas and United States Senator: His Life and Speeches, with Personal Reminiscences* (Little Rock, Ark., 1913).

DAVIS, JEFFERSON (1808-89). A soldier, statesman, and the President of the Confederate States of America. He was born in Christian, now Todd, Co., Ky., June 3, 1808, the chief strains in his blood being Welsh and Scottish-Irish. His family removed during his infancy to Mississippi, with which State his fame has always been connected. He received a gentle rearing, although his education was at first limited, owing to the conditions of the country. After a year or two at a Roman Catholic school in Kentucky, and a short period at a college in

Mississippi, he entered Transylvania University at Lexington, Ky., an institution which seems to have done good work for those times. Here he received the elements of a classical education; but in 1824, before graduation, he was transferred to West Point. He graduated rather low in his class, but he had given evidence of soldierly qualities and had won the regard of his classmates. Entering the army at once, in 1828, with the usual brevet of second lieutenant, he served seven years on the northwestern frontier, manifesting capacity to command, to perform arduous duties, and to win confidence and affection. In 1835, falling ill, he resigned from the army, in which he had risen to the rank of first lieutenant, and in the same year married a daughter of Zachary Taylor. The young wife died, however, in a few months, and Davis sought restoration for his shattered health in Cuba. After a short stay in Washington, where he began his friendship with Franklin Pierce, he returned to Mississippi and devoted himself to planting and study. This period from 1837 to 1845 was spent in an almost hermit-like seclusion, and Davis, who as early as 1833, when the Nullification controversy was at its height, had made up his mind that it was unconstitutional to coerce a State, now gained fluency and logical consistency in advocating the States' rights doctrines held by Calhoun. In 1844 he was chosen as a presidential elector on the Polk and Dallas ticket. After some little participation in local politics he was elected to Congress in 1845, where he favored the annexation of Texas. He was a ready and dignified speaker and an ardent but by no means servile follower of Calhoun. The next year, on the outbreak of the Mexican War, he was elected colonel of the First Mississippi Volunteers and distinguished himself at Monterey and Buena Vista, his famous formation of the reentering angle at the latter engagement being a gallant exploit. On his retirement from the war with a severe wound the Governor of Mississippi in 1847 appointed him to fill a vacancy in the United States Senate, and in 1848 the Legislature elected him for the remainder of the term: in 1850 he was re-elected for a full term of six years. In the debates relative to the introduction of slavery into the Territories Davis was zealous for the institution and for a strict construction of the Constitution. He strongly opposed the Compromise Measure of 1850. In 1851 he resigned in order to make the contest for the governorship against the Unionist candidate. Davis made a vigorous canvass, but was defeated by a small majority. In March, 1853, he became Secretary of War under President Pierce and made an efficient official, improving the service in various ways. He sent out surveying parties to find and survey a practicable railroad route from the Mississippi to the Pacific, having previously advocated in the Senate the construction of a transcontinental railroad. In the matter of the Kansas-Nebraska legislation he proved a bad adviser to the President, but he was thoroughly conscientious. When he reentered the Senate in 1857, he was the acknowledged leader of the Southerners, becoming the most determined, though not the most radical, of the States' rights men in the stormy days just before the war. In 1860 he offered in the Senate a series of resolutions which were adopted, to the effect that the States had formally accepted the Constitution as independent

sovereigns, delegating to the general government a portion of their power for the sake of security; that the intermeddling on the part of any one of them with the domestic institutions of another was not only insulting, but dangerous to the domestic peace and tending to destroy the Union; that negro slavery was legal, and that neither Congress nor territorial legislation had the right to interfere with it. In a speech delivered in the Senate, Jan. 10, 1861, he maintained the constitutional right of secession and declared the South could no longer remain in the Union without being degraded. Yet Davis was devoted to the Union, and when on the secession of Mississippi in 1861 he left the Senate, it was with real sadness that he set forth his principles in a farewell speech to which a crowded audience listened with deep attention.

On Feb. 9, 1861, Davis was elected President of the provisional government of the Confederacy by the Congress assembled at Montgomery, Ala. He was chosen because his course throughout had been marked by consistency and moderation in comparison with the other secession leaders. The choice was made without intriguing and was eminently popular. The inauguration took place Feb. 18, 1861. At the expiration of the first year of the provisional government a new Congress was elected, and on Feb. 22, 1862, Davis was again inaugurated, entering upon a term which was set for six years by the Constitution. His career as President takes in nearly all of Confederate history, his side of the matter being given ably and fully in his *Rise and Fall of the Confederate Government* (2 vols., 1881). The military training which he had had made him desire a close control over his generals, and he seems in consequence to have made not a few mistakes. The unanimity with which he and General Lee worked would have been impossible had not the latter been so void of selfish ambition. Davis's statesmanship was rather doctrinaire, and when he had actually to assume almost a dictatorship as the war progressed, he was not found well fitted for the eminently executive task of financing and controlling the Confederacy. He was not a great manager of men, and he often acted without tact. He strove earnestly to inspire his people, he set his face against barbarity in the conduct of the war, he tried to alleviate the sufferings of prisoners; and, on the whole, he maintained his dignity and self-respect under ordeals that would have crushed a man less resolute or less sincere.

After the surrender of Lee and of Johnston, Davis, with a few friends who volunteered as an escort, started for Washington, Ga., for the purpose of making his way to the trans-Mississippi region. A report that his wife was in danger led him to change his course to join her, and on May 10, 1865, he was captured at Irwinville, Ga. The story of his assuming woman's dress as a disguise has been shown to be untrue. He was confined in Fortress Monroe and subjected to the useless degradation of manacles. He earnestly desired a public trial and feared that he would die before refuting the charge of complicity in the assassination of Lincoln. An indictment was found against him for treason, but he was admitted to bail in May, 1867, Horace Greeley, Gerrit Smith, and other prominent Northerners going on his bond. An attempt made by his counsel to quash the indictment on

which he was brought to trial failed. He was released by an order of *nolle prosequi* in February, 1869. After his release he visited Canada and England and went into business at Memphis, Tenn. In 1879 he finally retired to Beauvoir, near Biloxi in Mississippi, resuming all inducements to reënter politics and devoting his time to writing and study. He retained the confidence of most of the Southern people, and his conduct during his retirement was dignified and consistent. He died of a congestive chill on Dec. 6, 1889, and was buried with imposing ceremonies at New Orleans. In 1893 the body was removed to Richmond. A full and valuable biography of Mr. Davis was written by his second wife, a Miss Howell, whom he married in 1845. She died in 1906. Consult also a brief autobiographical article published in *Belford's Magazine* for January, 1890, and W. P. Trent's *Southern Statesmen of the Old Régime* (1897). The earlier biographies by Alfriend and Pollard are respectively eulogistic and condemnatory. For full accounts of Davis's period, consult Rhodes, *History of the United States from the Compromise of 1850* (New York, 1892 et seq.), and Dodd, *Jefferson Davis* (Philadelphia, 1905).

DAVIS, JEFFERSON C. (1828-79). An American soldier, born in Indiana. He served as a volunteer in the Mexican War, subsequently becoming lieutenant in the regular army, and was stationed at Fort Sumter during the bombardment of April 12-13, 1861. During the Civil War he commanded a brigade, played an important part in the battle of Pea Ridge, the siege of Corinth, the battle of Stone River, and Sherman's Atlanta campaign, and was made brigadier general of volunteers in 1861. He was brevetted major general United States army in 1865 and became a colonel in the regular service in the following year. In 1873, after the murder of General Canby, he suppressed the Modoc uprising in northern California.

DAVIS, or DAVYS, JOHN (c.1550-1605). An English navigator, born at Sandridge, near Dartmouth. He is distinguished for having, between 1585 and 1588, undertaken three voyages to the northern seas in search of a northwest passage. In the first of these he discovered the strait which bears his name; in the last he sailed up this strait as far as 72° 12' N. His voyages extended along the West Greenland coast as far as what is now Upernavik, and along the coast of the American side of the strait from Cape Dyer to southern Labrador. He afterward made five voyages to the East Indies, in the last of which he was killed in a fight with Japanese pirates off Bintang, near Sumatra. He wrote *The World's Hydrographical Description* (1595) and *The Seaman's Secrets* (1594), which were republished by the Hakluyt Society in 1880. He is often confounded with John Davis of Limehouse, another navigator and author.

DAVIS, JOHN CHANDLER BANCROFT (1822-1907). An American diplomatist. He was born in Worcester, Mass., graduated at Harvard in 1840, studied law, and practiced in New York. He was secretary of the United States Legation in London from 1849 to 1852, was the American correspondent of the London *Times* from 1854 to 1861, was Assistant Secretary of State in 1869-71 and again in 1873-74 after being secretary of the commission which concluded the Treaty of Washington, and United States agent

at the Geneva Court of Arbitration. (See *ALABAMA CLAIMS*.) From 1874 to 1877 he was United States Minister to Germany, and from 1878 to 1881 was a judge in the United States Court of Claims. He became reporter of the United States Supreme Court in 1883. Among his publications, in addition to the reports of Supreme Court decisions, are: *The Massachusetts Justice* (1847); *The Case of the United States Laid before the Tribunal of Arbitration at Geneva* (1871); *Treaties of the United States, with Notes* (new ed., 1873).

DAVIS, JOHN D. (1854-). An American Orientalist and biblical scholar. He was born at Pittsburgh, Pa., and was educated at the College of New Jersey and at the Universities of Bonn and Leipzig, afterward becoming professor of Oriental and Old Testament literature at Princeton Theological Seminary. In addition to frequent contributions to theological magazines, he published *Genesis and Semitic Tradition* (1894) and *A Dictionary of the Bible* (1898).

DAVIS, SIR JOHN FRANCIS (1795-1890). An English diplomat and Sinologist, born in London. He was a son of Samuel Davis, director of the East India Company from 1810 to 1819. He accompanied Lord Amherst to Peking in 1816, and rose rapidly in the service of the East India Company, in the employ of which he had been since his boyhood. After serving for two years as the chief representative of the company at Canton, he was appointed joint commissioner in China with Lord Napier in 1834 and in 1844 became British plenipotentiary in China. In his capacity as Governor of the British colony at Hongkong he contributed greatly to the development of British trade at that centre. It was under his administration that the Bogue forts were reduced, and the annoyances to which British residents had been subjected at the hands of the mandarins were ended. Although he may in some respects be said to have laid the basis of British power at Hongkong, the treaty whereby the city was to be opened to foreigners, which Davis had arranged with the Chinese government, was disapproved by England, and, mortified at his lack of recognition, he resigned his position in 1848. Of his works relating to China and Chinese life, the following are especially noteworthy: *Chinese Novels Translated from the Originals* (1822); *Hien Wun Shoo, Chinese Moral Maxims, with a Free and Verbal Translation* (1823); *The Fortunate Union* (trans. from the Chinese, 1829); *The Chinese: A General Description of China and its Inhabitants* (2 vols., 1836); *Chinese Miscellanies* (1865).

DAVIS, KATHARINE BEMENT (1861-). An American penologist and public official, born in Buffalo, N. Y. She graduated from Vassar College in 1892 and studied also at the University of Chicago, where she received the degree of Ph.D. in 1900. Mt. Holyoke College conferred on her the degree of LL.D. in 1912. In 1892-97 she had charge of the college settlement in Philadelphia, and from 1901 to 1913 she was superintendent of the Bedford Reformatory, which she opened with one girl inmate, and which under her direction became famous among penologists. Miss Davis applied laboratory methods in studying the causes of delinquency among girls and women. In 1914 Mayor John Purroy Mitchel of New York City appointed her commissioner of correction, she being the

first woman to head a department of government in that city.

DAVIS, MATTHEW L. (1766-1850). An American author, born in New York. He was long the Washington correspondent of the *New York Courier and Enquirer*, over the pen name "The Spy in Washington." He also wrote under the names "The Genevese Traveler," "Marcus," and "Philo-Cato." In 1797 he conducted a short-lived literary enterprise at New York, known as the *Timepiece and Literary Companion*. As the friend of Aaron Burr during a period of 40 years, he published the *Memoirs of Aaron Burr, with Miscellaneous Selections from his Correspondence* (2 vols., 1836-37), and also edited *The Private Journal of Aaron Burr during his Residence in Europe* (1838).

DAVIS, NATHAN (1812-82). An English traveler and archaeologist. He edited the *Hebrew Christian Magazine* in 1852, subsequently was a Nonconformist clergyman, and in 1856-58 conducted at Utica and Carthage excavations for the British Museum: at Carthage the excavations were made on the supposed site of the Odeum. In 1858 he sent to the museum 51 cases of antiquities. Other cases were sent in 1857 and 1860. He published, besides other works, *Tunis* (1841); *Arabic Reading Lessons* (with B. Davidson, 1854); *Evenings in my Tent* (2 vols., 1854); *Carthage and her Remains* (1861); *Ruined Cities within Numidian and Carthaginian Territories* (1862).

DAVIS, NATHAN SMITH (1817-1904). An American physician. He was born at Greene, N. Y., and was educated in Cazenovia Seminary and in the College of Physicians and Surgeons of the western district of New York, from which he graduated in 1837. He helped to found the American Medical Association, of which he was president in 1864-65. He practiced at Binghamton, N. Y., 1837-47; New York City, 1847-49, during which time he was editor of the *Annalist*. He was professor of physiology and pathology, Rush Medical College, Chicago, 1849-59, and professor of practice of medicine, 1850-59. He organized the *Northwestern Medical Journal* in 1855 and was its editor till 1875; organized the *Medical Examiner* in 1860 and edited it till 1873. He was professor of principles and practice of medicine, Chicago Medical College, from 1859 to 1886, when he became emeritus professor. He organized the *Journal of the American Medical Association* in 1883 and edited it till 1889. He was a founder of the Northwestern University, of the Chicago Academy of Sciences, the Chicago Historical Society, the Illinois State Microscopical Society, the Union College of Law (in which he was for many years professor of medical jurisprudence), and the Washington Home for Inebriates. He published, among other books: *A Textbook on Agricultural Chemistry* (1848); *History of Medical Education and Institutions in the United States* (1851); *Effects of Alcoholic Drinks* (1854); *History of the American Medical Association* (1897); *Clinical Lectures* (1884); *Progress of Medical Education in the United States* (1876).

DAVIS, NOAH (1818-1902). An American lawyer and judge of distinction. He was born in Haverhill, N. H., removed to Albion, N. Y., with his parents in 1825, was admitted to the New York bar in 1841, and practiced in Buffalo and other western cities in that State. In 1857 he was elected a judge of the New York Supreme

Court but resigned in 1868 to run for Congress. He served only one term in the House of Representatives (1869-70), when he was appointed United States district attorney for the southern district of New York. In 1872 he again became a justice of the State Supreme Court. The famous trials of Edward Stokes and W. M. Tweed were held before him, and he sentenced Tweed to 12 years' imprisonment—a cumulative sentence, which was later disallowed by the Court of Appeals. He was Chief Justice from 1874 until 1887, when he resigned to resume the practice of law. He published *Intemperance and Crime* (1879).

DAVIS, REBECCA HARDING (1831-1910). An American novelist and miscellaneous writer, born at Washington, Pa. She was married to L. Clarke Davis, a Philadelphia journalist, in 1863. Her sons, Richard Harding Davis and Charles Belmont Davis, made their mark in contemporary literature while their mother was still an active writer. She wrote, notably: *Dallas Galbraith* (1868); *A Lac unto Herself* (1878); *Kent Hampden* (1892); *Dr. Warrick's Daughters* (1896); *Frances Waldeau* (1897); *Bits of Gossip* (1904).

DAVIS, RICHARD HARDING (1864-1916). An American journalist and popular novelist. He was born in Philadelphia, Pa., a son of Rebecca Harding Davis, and was educated at Lehigh and Johns Hopkins universities. He began his writing as a reporter in Philadelphia. In 1888 he went to New York and gained distinction for noteworthy stories, first printed in the *New York Evening Sun*. For a short time he was managing editor of *Harper's Weekly* (1890). In 1914 he was correspondent for the *New York Tribune* in Mexico during the hostilities between that country and the United States. His novels and short stories are breezy and stirring, full of incident and adventure, and marked by clever and striking, if not deep or subtle, characterization. His sketches and books of travel and description have in generous measure the qualities proper to excellent journalism. Among his books are: *Gallegher and Other Stories* (1891); *Stories for Boys* (1891); *Van Bibber and Others* (1892); *Our English Cousins* (1894); *About Paris* (1895); *The Rulers of the Mediterranean* (1894); *The Exiles* (1895); *Three Gringos in Venezuela and Central America* (1896); *Cuba in War Time* (1898); *The Cuban and Porto Rican Campaign* (1898); *With Both Armies in South Africa* (1900); *The Princess Aline* (1896); *The King's Jackal* (1899); *Soldiers of Fortune* (1897), dramatized and presented with great success in 1902; *Captain Macklin: His Memoirs* (1902); *The Bar Sinister* (1904); *Kits and Outfits* (1905); *Real Soldiers of Fortune* (1907); *The Man Who Could Not Lose* (1911); *The Lost Road* (1913). *The Taming of Helen* (1903), *Ransom's Folly* (1904), *The Dictator* (1904), *The Galloper*, *The Yankee Tourist*, *Vera the Medium*, and *Blackmail*—all plays—appeared between 1903 and 1913.

DAVIS, THOMAS OSBORNE (1814-45). An Irish poet. He was born at Mallow, County Cork, was educated at Trinity College, Dublin, and called to the bar in 1838. In 1841 he became associate editor of the *Dublin Morning Register*, and in the following year, in collaboration with Duffy and Dillon, he founded the *Nation*, an organ of Nationalist tendencies, which acquired an immense popularity—due largely to the patriotic ballads contributed to it

by Davis. Notwithstanding his Protestant faith and early Tory affiliations, Davis earnestly endeavored to allay the discords between the Catholic and Protestant elements. He was gifted with a remarkable capacity for work and was universally respected for his sterling integrity and the fidelity with which he adhered to his convictions. One of his noteworthy achievements was his founding of the party known as "Young Ireland." His *Poems* (1846), which include the fine verses entitled "Máire Bhán a Stofr," "The Sack of Baltimore," and "The Flower of Finea," were collected and published after his death in *Duffy's Library of Ireland*; and his *Literary and Historical Essays* appeared in the same year as the poems. Consult Sir C. G. Duffy, *Young Ireland* (London, 1880), and *Treasury of Irish Poetry* (London and New York, 1907), ed. by Brooke and Rolleston.

DAVIS, VARINA ANNE JEFFERSON, known as "The Daughter of the Confederacy" (1864-98). An American writer born in Richmond, Va. Her father was President Jefferson Davis of the Confederate States of America. She was educated abroad and was known as a musician, a painter, and as author of a *Sketch of the Life of Robert Emmet* (1888); *The Veiled Doctor* (1895); *A Romance of Summer Near* (1898).

DAVIS, WILLIAM MORRIS (1850-). An American geographer and geologist. He was born in Philadelphia and was educated at the Lawrence Scientific School of Harvard University. In 1886 he made an observation of a new star, *T Corona Borealis*, of which at the time only one other astronomical observation was made in the United States. He also rendered valuable service as assistant astronomer in the Argentine National Observatory at Córdoba from 1870 to 1873. He taught astronomy and geology at Harvard for 14 years, in 1890 became professor of physical geography there, and in 1899 was made Sturgis-Hooper professor of geology. His lectures and writings on the development of the physical features of the earth have given him high rank in that branch of study which is known as physiography. In 1911 he was president of the Geological Society of America. His numerous shorter articles have been published in the *American Journal of Science* and other periodicals. Besides these, his works include: *Elementary Meteorology* (1894); *Physical Geography* (1899); *Whirlwinds, Cyclones, and Tornadoes* (1884); "Journey Across Turkestan," in Pampelly's *Explorations in Turkestan* (1905).

DAVIS, WILLIAM STEARNS (1877-). An American university professor and writer, born at Amherst, Mass. He graduated at Harvard University in 1900 and took postgraduate work until 1905. He was lecturer at Radcliffe College (1904-05), instructor at Beloit (Wis.) College (1906-07), and associate professor of mediæval and modern European history at Oberlin College (1907-09). In 1909 he became professor of history at the University of Minnesota. His publications, history and historical fiction, include: *A Friend of Caesar* (1900; 2d ed., 1913); "God Wills It" (1901); *Belshazzar*, 1902; *The Saint of the Dragon's Dale* (1903); *Palace of the Blessed Voice* (1904); *A Victor of Solamis* (1907), by which he is most popularly known; *An Outline History of the Roman Empire* (1909); *The Influence of Wealth in Imperial Rome* (1910); *The Friar of Wittenberg*

(1913); *A History of Mediæval and Modern Europe* (1914).

DAVIS STRAIT. The sheet of water separating Greenland on the east from Baffin Land on the west, and connecting Baffin's Bay with the Atlantic (Map: America, North, N 3). It is from 180 to 500 miles wide and was discovered in 1585 by John Davis, whence its name. The northern half is navigable only in late summer, when the southerly drifting ice fields, known as the *middle pack*, leave a large open space which is called the *north water*. It has soundings exceeding 5000 feet in the north and south portions, but not reaching 2500 feet in the intervening region. It has two powerful currents—one (of drift ice) on the west, towards the south, and one on the east, towards the north. Consult *Meddelelser om Grønland*, vols. iv, vi, vii.

DAVITT (formerly *davitt*, *david*, from *David*, the custom of giving implements proper names being a frequent one). A derrick of various forms, depending upon the use to which it is put. *Boat davits* are used in hoisting boats, the *cat davit* in catting the anchor, and the *fish davit* in fishing it. In modern ships of large size all anchor davits are being done away with, the anchor being pulled up into the hawse pipe. Removable davits are frequently placed at small hatches for handling stores, at the sides to support the gangway ladder, etc. On many passenger steamers whose boats are stowed inboard on the boat deck, the *Welin davit* is used. This consists of a straight steel arm or *davit* with the lower end bolted to a steel semicircular arc, coggled on its circumference. The cogs of the arm work in a flat rack on the deck as the boats are swung in or out.

DA'VITT, MICHAEL (1846-1906). An Irish journalist and political leader, the founder of the Irish Land League. He was born in Straid, County Mayo, where his parents, poor peasants, were evicted from their farm when Davitt was four years of age. While engaged as a boy in a cotton factory at Haslinden, Lancashire, he lost his right arm in the machinery. From the age of 15 to 22 he worked in a printing office and educated himself. He joined the Irish revolutionary movement in 1867 and was present at the attack on Chester Castle. Detected transporting arms into Ireland in 1870, he was sentenced to 15 years' penal servitude, but after serving half the sentence was released on a ticket of leave in 1877 and visited the United States on a lecturing tour. He obtained funds to carry on a crusade against Irish landlordism and on Oct. 21, 1879, at his birthplace, organized the Land League, which spread over Ireland. He again visited America in 1880, to superintend the organization of an American branch of the Land League, but hurried back to England on account of the prosecution of the Land League executive. He was arrested under the Coercion Act and reimprisoned to finish his old sentence. He was leniently treated during 15 months and again released on a ticket of leave. He revisited America to advocate the revival of the Land League and on his return to Ireland organized the National League. In 1883 he was imprisoned for three months for a seditious speech. In 1882, while in prison, he had been elected member of Parliament for Meath, but was disqualified on the grounds of his unexpired ticket of leave. Elected in 1892 to the House of Commons for Westmeath and unseated, he was re-

turned unopposed for North East Cork, but shortly afterward was compelled to vacate through bankruptcy. In 1895 he was returned unopposed for East Kerry and South Mayo, but resigned in 1899. In 1889 he was implicated in the "Parnellism and Crime" prosecution instigated by the London *Times*, and conducted his own defense in an effective speech which received the commendation of the presiding judge. Although a strong Home Ruler, he was opposed to Parnell's land nationalization scheme, and at that leader's deposition in 1890 Davitt became a prominent Anti-Parnellite. After a visit to Australia he published his *Impressions of Australasian Democracy*, in 1898, and the same year wrote letters to the *Times* contending that the dominating English-speaking race in America is largely of Celtic origin and therefore anti-Saxon in feeling. He visited South Africa during the Boer War and investigated the massacre of Kishineff in 1903. Besides a vast number of journalistic articles, including "Prisons Revisited" in the *Daily Chronicle* (1889), his works include: *Leaves from a Prison Diary* (1884), *Defense of the Land League* (1891); *The Boer Fight for Freedom* (1902); *Within the Pale* (1903); *The Fall of Feudalism in Ireland* (1904); *Pageant of London* (1905). Consult Cashman, *Life of Michael Davitt* (Boston, 1881).

DA VOLTERRA, DANIELE RICCIARELLI. See VOLTERRA.

DAVOS, dā'vōs. A Rhetian-Alpine valley in the Canton of Grisons, Switzerland, 5115 feet above sea level; surrounded by five tall peaks, the Schiahorn, the Jakobshorn, Jatzhorn, Tälhorn, and Sechorn (Map: Switzerland, D 2). Stretching about 20 miles from east to southwest, it is traversed by the Davos Landwasser, which flows from Lake Davos; the lake has an area of one-fifth of a square mile and a depth of 175 feet. The sheltered situation and pure, dry air of the valley have made it a favorite winter and summer resort for invalids, especially consumptives. Davos Platz and Davos Dorf, its former villages, are now thriving and fully equipped health resorts, with hotels, sanatoriums, etc. An international skating competition is held in January of each year. Davos Platz (pop., 1900, 8334; 1910, 11,730) is the chief town of the district and in the fifteenth century was the capital of a confederation of ten Grison republics. John Addington Symonds lived and wrote most of his works here. Consult Symonds, *Our Life in the Swiss Highlands* (London, 1892).

DAVOUT, dā'vōt, LOUIS NICOLAS, DUKE OF AUERSTÄDT and PRINCE OF ECKMÜHL (1770-1823). One of Napoleon's most celebrated marshals. He was born, May 10, 1770, at Annoux, in Burgundy, of a noble provincial family. After being educated at Brienne he entered the army as lieutenant of cavalry in 1788, but his revolutionary leanings led to his dismissal in 1790. He soon reappeared, however, in the Army of National Defense, and during the Revolutionary wars served with distinction under Dumouriez, and after 1793 as brigadier general under Pichegru and Moreau. In 1798, having accompanied his chief, Desaix, to Egypt, he soon attracted the attention of Bonaparte by the skillful way in which he handled his troops at Abukir. On returning to France in 1800 Davout was made a general of division and commanded the cavalry in the Italian campaign of that year. Shortly afterward he became inspector general of cavalry and commander of the Con-

sular Guard. Soon after the Empire was proclaimed he became a marshal of France (1804), a member of the Legion of Honor (1805), and commander of the Third Army Corps. In all of Napoleon's campaigns Marshal Davout distinguished himself. At Auerstädt (1806) his generalship won the day against superior forces. After the Peace of Tilsit Davout was left as Governor of the Grand Duchy of Warsaw. His harsh administration provoked numerous complaints on the part of the inhabitants; but he appears merely to have carried out the instructions of Napoleon, who in 1808 created him Duke of Auerstädt. The brilliant victory won at Eckmühl in 1809 earned for him the further title of Prince. At Wagram (q.v.) he practically won the battle by turning the enemy's left. As commander of the Imperial forces in Germany after 1810 he supported the rigorous enforcement of the continental system along the North Sea littoral, and prepared the army for the Russian campaign of 1812. In this campaign he took a prominent part, gaining a victory at Mohilev and being wounded at Borodino. After the retreat he was made commandant of the Thirty-second Military District, with headquarters at Hamburg; but after defending the city for several months against 80,000 Germans, he surrendered and made his submission to Louis XVIII. His loyalty, however, was not proof against the return of Napoleon, and during the Hundred Days he acted as Minister of War and showed remarkable genius in organizing troops and procuring supplies. After Waterloo he was forced to surrender the command he had assumed under the walls of Paris and for a time was in deep disgrace and deprived of his titles and estates. Nevertheless he protested vigorously against the proscription of 1815 and made praiseworthy efforts to save Ney's life. In 1817 his rank was restored to him, and in 1819 he took a seat in the House of Peers, where he frequently protested his loyalty to the Bourbon line. He died in Paris, June 1, 1823. Consult: Bloqueville, *Le maréchal Davout* (Paris, 1879-80), *Correspondance du maréchal Davout*, ed. Mazade (4 vols., Paris, 1885); Jomini, *Life of Napoleon*, trans. by Halleck (5 vols., New York, 1864); Montégut, *Le Maréchal Davout* (Paris, 1882); Holzhausen, *Davout in Hamburg* (Mülheim-on-the-Ruhr, 1892); Comte Vigier, *Davout, Maréchal d'Empire* (2 vols., Paris, 1898).

DAVUS (Lat., a Dacian). The name of the conventional slave in Latin comedy.

DA'VY, SIR HUMPHRY (1778-1829). A celebrated English chemist. He was born at Penzance, in Cornwall, where his father was a carver in wood. At the school of Truro, where he was educated until he was 15, he showed little relish for classical learning, but was distinguished for a highly retentive memory and an early passion for poetry, which never forsook him. In 1795 he became apprenticed to a surgeon and apothecary at Penzance. At the same time he entered upon a course of study all but universal: a system of mathematical study, skeptical philosophy, Scotch metaphysics, and German transcendentalism successively engaged his attention. The study of natural philosophy brought him nearer to that department which was to be his own; but it was not till he had reached his nineteenth year that he entered seriously upon the study of chemistry. He now made the acquaintance of Dr. Beadées, who

had established a pneumatic institution at Bristol and who took him as his assistant. Here Davy carried out a course of experiments on the curative effects of different gases, in which he had more than once nearly sacrificed his life. He thus discovered the singular exhilarating effect of nitrous oxide (laughing gas). The account which he published of his researches established his reputation and led to his appointment, at the age of 22, as lecturer at the Royal Institution of London. He delivered his first lecture in 1801, and his eloquence and the novelty and variety of experiments soon attracted large and brilliant audiences. In 1802 he was made professor of chemistry at the Royal Institution. In 1803 he began researches connected with agriculture and during 10 years lectured before the Board of Agriculture on agricultural chemistry. His lectures were published in 1813, under the title *Elements of Agricultural Chemistry*. The discoveries, however, on which Davy's fame as a chemist chiefly rests took their origin in the views which he developed in 1806 in the Bakerian lecture, *On Some Chemical Agencies of Electricity*. This essay was universally regarded as one of the most valuable contributions ever made to chemical science and obtained the prize of the French Institute. A remarkable view first advanced in this essay is that chemical affinity is nothing but the mutual electrical attraction of the ultimate particles of matter. Davy's electrolytic experiments led to the establishment on a firm scientific basis of Lavoisier's idea that bases are compounds of oxygen with metals, and to the extension of this idea to caustic potash and soda, which Lavoisier had regarded as elements. In 1807 Davy succeeded in decomposing potash. When he first saw the globules of the new metal potassium, his delight is said to have been so ecstatic that it required some time for him to control himself before he was able to continue the experiments. In the following year he decomposed soda, lime, baryta, and strontia, obtaining the metal sodium in the isolated state and the metals calcium, barium, and strontium in the form of alloys with mercury (amalgams). Owing to a delay in Davy's work caused by a severe illness, calcium and barium were independently isolated in 1808 by Berzelius and Pontin. In 1809 Davy demonstrated the elementary nature of chlorine and proved that hydrochloric acid is a compound of chlorine and hydrogen. It thus became clear that oxygen was not by any means an essential constituent of acids.

In 1812 Davy was knighted, married a lady of considerable wealth, and resigned the chemical chair of the Royal Institution. That he might investigate his new theory of volcanic action, he received permission from the French government—though the two countries were then at war—to visit the Continent and was received with the greatest distinction by the scientific men of France. On this visit he was accompanied by his assistant, Michael Faraday. Returning to England, in 1815, Davy entered on the investigation of the nature of fire damp, which is the cause of explosions in coal mines. This resulted in the invention of the safety lamp (q.v.), one of the most valuable presents ever made by science to humanity. On the death of Sir Joseph Banks, in 1820, Sir Humphry Davy was elected president of the Royal Society. His attention was shortly after called to the

important problem of preserving the copper sheathing of vessels from corrosion by the action of sea water. This he effected by means of bands of zinc; but the bottoms of the vessels became so foul from the adhesion of weeds, shells, etc., that the plan had to be abandoned.

Early in 1825 Sir Humphry Davy had begun to complain of the loss of strength, and in 1826 he had a paralytic attack affecting his right side. He made two journeys to the Continent for the recovery of his health, and died at Geneva on May 29, 1829, at the early age of 51. The Genevese government evinced their respect by a public funeral. So widely spread was the reputation of Sir Humphry Davy that he was a member of almost all the scientific institutions in the world. Cuvier, in his *Eloge*, says: "Mr. Davy, not yet 52 years of age, occupied, in the opinion of all that could judge of such labors, the first rank among the chemists of this or of any other age." Besides works already mentioned, and a great number of contributions to the *Philosophical Transactions*, Davy published: *Elements of Chemical Philosophy* (1812), and *Salmonia, or Days of Fly Fishing* (1827). His *Consolations in Travel, or the Last Days of a Philosopher* (3d ed., 1831), appeared after his death. Consult *Memoirs of the Life of Sir Humphry Davy*, by his brother (2 vols., London, 1836), and *The Life of Sir Humphry Davy*, by Dr. Paris (ib., 1831). See also CHEMISTRY; CHEMISTRY, AGRICULTURAL.

DAVY JONES'S LOCKER. A common phrase applied to the ocean as the grave of men drowned at sea. Davy Jones is a sailor's familiar name for a malignant sea spirit or for the devil.

DAVY SAFETY LAMP. A lamp made especially for use in gaseous coal mines. The flame is completely enveloped in wire gauze to prevent exploding the gas in the mine. See SAFETY LAMP.

DAW. See JACKDAW.

DAWA/LA. A catfish (*Ageneiosus darwella*) found in the rivers of Guiana and highly esteemed as food. It is sometimes 2½ feet long and has a snout somewhat like that of a pike, but the mouth is furnished only with very minute teeth. The skin is destitute of scales, and the colors have that brightness so often seen in tropical fishes—green, brown, and carmine.

DAWANT, dā'vān', ALBERT PIERRE (1852–). A French painter and illustrator, born in Paris. He was a pupil of Laurens (q.v.) and both in color and composition resembles his master. His pictures include "Departure of Emigrants from Havre" (Metropolitan Museum, New York); "A Choir of Boys" (1888, Luxembourg); "The End of the Mass" (1891, Nantes Museum). One of his best historical pictures is "The Emperor Henry IV of Germany before Pope Gregory VII" (1880, Agen Museum). He received a first-class medal at the Paris Exposition in 1889 and was made Officer of the Legion of Honor in 1900. His later works include "Distress" and "Death: Sebastopol" (1904) and "The Review at Bethany" (1905, Versailles Gallery). After 1908 he painted chiefly portraits. His illustrations of the works of Victor Hugo, Alphonse Daudet, and Alfred de Vigny deserve mention.

DAWES, dāz, CHARLES GATES (1865–). An American civil engineer, lawyer, and politi-

cian, born at Marietta, Ohio. He graduated in 1884 at Marietta College and in 1886 at the Cincinnati Law School, became chief engineer of an Ohio railway, and practiced law at Lincoln, Neb., in 1887-84. He was a leader in the McKinley movement in Illinois which resulted in instructions for McKinley at the Springfield (Ill.) Convention of April, 1896. He was Comptroller of the Currency from 1897 to 1902. About 1894 he became interested in the gas business and built plants at Evanston, Ill., La Crosse, Wis., Seattle, Wash., and other cities. In 1902 he became president of the Central Trust Company of Illinois. He published *The Banking System of the United States* (1892).

DAWES, HENRY LAURENS (1816-1903). An American politician, born in Cummington, Mass. He graduated at Yale in 1839, engaged in newspaper work for a time, studied law, and in 1842 was admitted to the bar. He was a member of the Lower House of the Massachusetts Legislature from 1848 to 1852 and was United States district attorney for the western district from 1853 to 1857. He served in Congress from 1857 to 1873 and in the Senate from 1875 to 1893, being active on several committees, particularly on that of Indian Affairs. For the last 10 years of his life he was chairman of the "Dawes" Indian Commission to the Five Civilized Tribes.

DAWES, RICHARD (1708-66). An English classical scholar, educated at Cambridge. In 1738-48 he was master of the grammar school at Newcastle-on-Tyne. In 1749 he resigned and retired to Heworth, where he died, in 1766. His last years were clouded by incipient insanity. Dawes is best known for his *Miscellanea Critica* (1745). This is a work of genuine worth, but contains some unfortunate attacks on Bentley. It embraces emendations of Terentianus Maurus, Aristophanes, and the Greek tragedians; discussions of the correct pronunciation of Greek, the use of the subjunctive and optative moods, the digamma, ictus, etc. For "Dawes's Canon," for which he is most famous, see pp. 415-416 of the work by Sandys, named below. Consult Luard, in *Dictionary of National Biography*, vol. xiv (London, 1888). Hodgson, *Archæologia Æliana*, vol. ii (Newcastle, 1832), and *An Account of the Life and Writings of Richard Dawes* (1828). Sandys, *A History of Classical Scholarship*, vol. ii (Cambridge, 1908).

DAWSON, dā'və-zōn, BOGUMIL (1818-72). A German actor, born at Warsaw, of Jewish parents. He began his career on the Polish stage in his native city and afterward played at Lemberg. Inspired there by the acting of two distinguished members of the Vienna Court Theatre, he resolved to identify himself henceforth with the German stage, applied himself assiduously to the study of the German language, and soon appeared with success in principal parts of standard dramas. In 1847 he played for the first time in Germany at Hamburg, was invited to Vienna in 1849, and there won great applause, especially in Shakespearean parts. In 1852 he became connected with the Court Theatre at Dresden, where he remained until 1864, interrupting his engagement only by traveling tours to the principal cities of Germany. Through his great talent and by his own exertions he had attained such eminence on the German stage as to be deemed by many the greatest actor of his time. His best-known rôles were Mephistopheles, Hamlet, Richard III,

and King Lear. In 1866 he came to America, where he appeared with great success during two years. Soon after his return to Dresden in 1869 he became insane and never recovered.

DAWKINS, JOHN. See **ARTFUL DODGER, THE**.

DAWKINS, WILLIAM BOYD (1838-). An English geologist and paleontologist. He was born at Welshpool, Montgomeryshire, Wales, and after graduating at Jesus College, Oxford (1860), became assistant geologist (1862), and later geologist (1867), to the Geological Survey of Great Britain. He became a lecturer in Owens College in 1870 and a professor in 1872. He was a member of the Channel Tunnel Committee (1882) and, after making a geological survey of the French and English coasts, laid down the line for a tunnel under the Humber (1883-84). He was made examiner at the University of London in 1885. His principal scientific work relates to the investigations of cave faunas. In addition to his papers on fossil mammalia contributed to the *Proceedings of the Geological, Anthropological, and Royal societies*, he published: *Cave-Hunting* (1874); *Researches on the Evidences of Caves Respecting the Early Inhabitants of Europe* (1874); *Early Man in Britain* (1880); *British Pleistocene Mammalia* (1866-87).

DAWLEY, THOMAS ROBINSON, JR. (1862-). An American journalist, born in New York City. He traveled much; in 1896 he was sent by *Harper's Weekly* to Cuba, and he was again there a year later, during the Spanish-American War he was a volunteer aid to General Miles and later to General Shafter, and after the fall of Santiago he tried to publish the *Times of Cuba*, but was forced to return to the United States. Thereafter he represented the Century Company in Spain and the *Outlook* at the Pan-American Congress in Mexico in 1901, traveled (1904) in Santo Domingo and reported to the President on political and social conditions in that island, and in 1907-09 investigated Southern industrial conditions for the United States Bureau of Labor. Besides magazine articles on Spanish-American countries and on Spain, he wrote *The Child that Toileth Not, the Story of a Government Investigation* (1912).

DAWLISH. An attractive and popular seaside resort in Devonshire, England, 12 miles nearly due south of Exeter (Map: England, C 6). It is situated on a cove sheltered by two headlands (one of them, Great Haldon, is 821 feet high) which project into the English Channel and create perfect conditions for sea bathing. Pop., 1901, 4003; 1911, 4009.

DAWSON. A city and the county seat of Terrell Co., Ga., 98 miles southwest of Macon, on the Central of Georgia and the Sea Board Air Line systems (Map: Georgia, B 4). It is in a cotton and fruit growing district and has cotton-oil, lumber, and grist mills. The city contains a Carnegie library. Settled about 1855, it was incorporated the following year. Under a revised charter of 1891 the city is governed by a mayor, elected for a term of two years, and a board of aldermen. Dawson owns its electric-light plant and water works. Pop., 1900, 2926; 1910, 3827.

DAWSON. A river port, the capital of Yukon Territory, in the northwestern part of Canada. It is situated on the right bank of the Yukon River, at its confluence with the Klom-

dike, in about lat. $64^{\circ} 5' N.$, long. $139^{\circ} 30' W.$, 360 miles direct north-northwest of Skagway, and about 1500 miles above the mouth of the Yukon River. It lies at an elevation of about 1400 feet above sea level, and near the site of old Fort Reliance (Map: Canada, C 4). It is the distributing and receiving centre of the Klondike gold-mining region and has a United States consulate. There is a railway to Bonanza, 12 miles away. The town dates from shortly after the discovery of gold on Bonanza Creek, Aug. 16, 1896. It is now a busy and well-established business centre. Since 1904 its government has been administered by the Territory. It is connected between June 1 and October 15 by a fleet of river steamers with the posts and stations on both the lower and upper Yukon and with telegraph lines to the coast. In winter the traffic is carried on four-horse sleighs. The industries include electric light and power, sheet-metal making, saw mills, brewing and malting, gold mining, coal mining, garden truck farming. There is a quartz mill. Big game can be had in the vicinity. Perfect order is maintained by the Royal Northwest Mounted Police. Pop., 1901, 9142; 1911, 3015.

DAWSON, ALEC JOHN (1872-). An English novelist. He was born at Wandsworth, London, S. W. After three years at sea he ran away while in Australia and began a life of adventure, traveling in the South Sea Islands, New Zealand, India, Mauritius, South America, West Africa, Morocco, Portugal, California, Canada, and all parts of Europe. He won attention with a collection of West Africa stories entitled *In the Bight of Benin* (1897), which was followed by *African Nights' Entertainments* (1900), a series of fiery stories of love and adventure in northern Africa. Among his other novels are: *Mere Sentiment* (1897); *Middle Greyneess* (1897); *Bismillah, a Romance* (1898); *God's Foundling* (1897); *Story of Ronald Kestrel* (1899); *The Half Caste* (1901); *Evolution and its Bearing on Religions* (1901); *Hidden Manna* (1902); *Things Seen in Morocco* (1904); *The Message* (1907). From 1898 to 1913 he was editor of what he described as "the first British Empire newspaper," the *Standard of Empire*.

DAWSON, CONINGSBY (WILLIAM) (1883-). An Anglo-American author, born at High Wycombe, Buckinghamshire, Eng. He graduated at Merton College, Oxford, in 1905 and in the same year went to America, where he did special work for English newspapers on Canadian subjects, traveling widely during this period. He lived at Taunton, Mass., from 1906 to 1910, when he became literary adviser to the George H. Doran Publishing Company. Besides helping his father, William James Dawson, to edit *The Reader's Library*, he is author of *The Worker and Other Poems* (1906); *The House of Weeping Women* (1908); *Murder Point* (1910); *The Road to Aralon* (1911); *The Garden Without Walls* (1913); *Florence on a Certain Night and Other Poems* (1914).

DAWSON, GEORGE (1821-76). A British Nonconformist clergyman, born in London, and educated at Marischal College, Aberdeen, and at the University of Glasgow. He preached in Baptist churches at Rickmansworth and Birmingham in 1843-45, but differences as to creeds led him to separate from all traditional church affiliations. His followers built the church of the Saviour, Birmingham, where, free of all doc-

trinal restrictions, he preached from 1847 until his death. His *Sermons* (4 vols., 1878-82); *Prayers* (2 vols., 1878-83), and *Biographical Lectures* (2 vols., 1886-87) were published posthumously. Consult H. W. Crosskey, *Memoir of George Dawson* (1876).

DAWSON, GEORGE MERCER (1849-1901). A Canadian geologist, son of Sir John William Dawson. He was born in Truro, Nova Scotia, and educated at McGill University and at the Royal School of Mines in London. In 1873 he received the appointment of geologist and botanist to the North American Boundary Commission, and subsequently he was on the staff of the Geological Survey of Canada. He was a member of the Bering Sea Commission in 1891. From 1895 until his death he filled the office of director of the Geological Survey of Canada, in which connection he rendered important services to his country. He was president of the Geological Society of America in 1900. His numerous scientific papers were published mostly in the reports of the survey. He was the author of *Descriptive Sketch of the Physical Geography and Geology of Canada* (1884) and of *The Physical and Geological Features of Part of the Rocky Mountains* (1885).

DAWSON, SIR JOHN WILLIAM (1820-99). A Canadian geologist and educator, born in Pictou, Nova Scotia. He entered the University of Edinburgh, where for some time he pursued the study of science and, upon returning to Nova Scotia, began active work in geology. In 1841 he assisted Sir Charles Lyell in exploring the geological formations of Nova Scotia, as a result of which he collected much new and valuable material in paleontology. The results of his early investigations were published in *Acadian Geology* (3d ed., 1880) and in American and foreign periodicals. In 1850 he became superintendent of education in Nova Scotia, and in 1855 he was called to McGill University as professor of natural history, afterward becoming vice chancellor. Dawson was recognized as an authority on Canadian geology, a subject to which he gave much study and contributed many valuable works. His name has been associated particularly with the controversy over the supposed fossil "Eozoön," which was found among the earliest rocks in the North American continent. He was also known as one of the ablest opponents of the application of the Darwinian theory to the origin of life forms. Among his important works are the following: *Acadia* (1851); *The Story of the Earth and Man* (1872); *The Dawn of Life* (1875); *The Origin of the World* (1877); *The Change of Life in Geological Time* (1880); *Egypt and Syria* (1885); *Modern Ideas of Evolution* (1890); *Some Salient Points in the Science of the Earth* (1894); *The Meeting Place of Geology and History* (1894). In 1882 he received the Lyell medal of the Geological Society of London, and the same year he was elected president of the American Association for the Advancement of Science. In 1884 he was knighted. In 1886 he was president of the British Association for the Advancement of Science, and in 1893 he was president of the Geological Society of America. He was also an honorary member of many American and European scientific societies.

DAWSON, MILES MENANDER (1863-). An American actuary, born at Viroqua, Wis. He was educated at Kentucky (now Transyl-

vania) University and the New York University Law School. He took up general practice as an insurance lawyer and consulting actuary and in this capacity was called on to serve the Armstrong Investigating Committee in New York and the Canadian Royal Commission on Life Insurance. Later he became expert special agent of the United States Census Bureau and actuary-in-charge of the investigation of fraternal mortality experience. His publications include: *Elements of Life Insurance* (1892; 3d ed., 1911); *American Life Insurance Methods* (1893); *The Effect of Free Surrender and Loan Privileges in Life Insurance* (1894); *Principles of Insurance Legislation* (1896); *Practical Lessons in Actuarial Science* (1897; 1905); *The Function of Insurance in Modern Society* (1898); *Things Agents Should Know* (1900); *Comparative Reserve Tables* (1905, 1908); *Survivorship Annuity Tables* (1910).

DAWSON, SAMUEL EDWARD (1833--). A Canadian author. He was born at Halifax, Nova Scotia, and was educated in Montreal, where he graduated from the Royal Military School in 1865. For many years he was head of a publishing and bookselling house, and he contributed frequently to newspapers and magazines. Worthy of special note were a series of papers in the *Toronto Week* in 1889-90 on "The English Minority in the Province of Quebec," and "Problems of Greater Britain." From 1891 until 1909 he was King's printer at Ottawa. In 1881 he was a delegate to Washington on the question of international copyright and in 1888 vice president of the Canadian Copyright League. In 1893 he was elected fellow, and in 1907 president, of the Royal Society of Canada. In 1906 he was created C.M.G. His principal publications are: *A Study of Lord Tennyson's Poem, The Princess* (1884); *Voyages of the Cabots in 1497 and 1498* (1895-97); *Canada and Newfoundland* (1897); *The St. Lawrence Basin and its Border Lands* (1905); *A Plea for Literature* (1908).

DAWSON, THOMAS CLELAND (1865-1912). An American lawyer and diplomat, born in Hudson, Wis. He graduated at Hanover College, Ind., and, being admitted to the Iowa bar in 1886, practiced law in Des Moines and Council Bluffs. He was from 1891 to 1897 Assistant Attorney-General of Iowa and from 1897 to 1904 Secretary of the United States Legation to Brazil; held high diplomatic posts in Santo Domingo in 1904-07; was Minister to Colombia (1907-09), to Chile (1909-10), and—after serving as Chief of the Division of Latin-American Affairs in the State Department—to Panama (1910). Following special service to Nicaragua, Honduras, and the Venezuelan centennial (1911), he became resident diplomatic officer of the Department of State. He wrote *South American Republics* (2 vols., 1903-04).

DAWSON, WILLIAM BELL (1854--). A Canadian civil engineer. He was born at Pictou, Nova Scotia, and was educated at McGill University, Montreal (where he graduated with high honors in 1874) and at the Ecole des Ponts et Chaussées, Paris. He was engaged for some years in railway and other surveys, in 1881 making a partial survey of the Nova Scotia gold fields. Shortly afterward he designed the cantilever bridge over the St. John River; and between 1884 and 1893 he designed many bridges for the Canadian Pacific Railway and its

branch lines. For the arbitrators of the Canadian Pacific-British Columbia dispute regarding the quality of certain sections of railway construction he spent about three years in investigation. In 1894 he entered the service of the Marine and Fisheries' Department, Ottawa, and he did important work as head of the Tidal and Current Survey. He was awarded the Watt gold medal by the Institute of Civil Engineers, London, England (1902), and the Gay prize of 1500 francs by the Academy of Science, Paris (1905).

DAWSON, WILLIAM HARBUTT (1860--). An English publicist, educated at Skipton School, Ermistead, and at Berlin University. He married a German wife and is best known for his sympathetic studies of German economic and industrial life. Dawson was appointed principal clerk of the English National Insurance Commission in 1912. Among his works are: *Social Insurance in Germany* (1883, 1911; 1912); *German Socialism and Ferdinand Lassalle* (1888; 1891); *Prince Bismarck and State Socialism* (1890); *Germany and the Germans* (1894); *Social Switzerland* (1897); *German Life in Town and Country* (1901); *Matthew Arnold and his Relation to the Thought of his Time* (1903); *Protection in Germany* (1904); *The German Workman: A Study in National Efficiency* (1906); *School Doctors in Germany* (1906); *The Unearned Increment* (3d ed., 1910); *Evolution of Modern Germany* (1909); *The Vagrancy Problem* (1910); *Social Insurance in Germany, 1883-1911* (1912); *Industrial Germany* (1913).

DAWSON, WILLIAM JAMES (1854--). An English clergyman and author. He was born at Towchester, Northamptonshire, was educated at Didsbury College, Manchester, and entered the Wesleyan ministry in 1875. He resigned from the Wesleyan ministry and entered the Congregational in 1892. In 1904 he resigned his charge in London to devote himself to evangelistic work. He wrote, notably: *A Vision of Souls* (1884), poems: *Quest and Vision, Essays on Life and Literature* (1886; enlarged, 1892); *The Makers of Modern Poetry* (1890); *The Redemption of Edward Strahan: A Social Story* (1891); *London Idylls* (1895); *The Story of Hannah* (1896); *The House of Dreams* (1897); *Judith Boldero: A Tragic Romance* (1898); *Makers of Modern Prose* (1899); *Navonrola: A Drama* (1900); *The Man Christ Jesus* (1901); *Makers of English Fiction* (1905); *The Forgotten Secret* (1906); *The Book of Courage* (1911); *The American Hymnal* (1913).

DAWSON, WILLIAM WIRT (1828-93). An American surgeon, born at Dawson's Mills, Berkeley Co., W. Va., and educated at Louisville University and at the Medical College of Ohio, from which he graduated in 1850. He served as professor of anatomy in the Cincinnati College of Medicine and Surgery (1853-56) and in the Medical College of Ohio (1860-64) and as surgeon and clinical lecturer at the Commercial (now Cincinnati) Hospital from 1864 to 1870, when he was appointed to the chair of surgery at the Medical College of Ohio. He was president of the American Medical Association in 1889. He is author of papers on carcinoma, hernia, Graves' disease, and abdominal tumors.

DAX, daks. The capital of an arrondissement.

ment in the Department of Landes, southwestern France, on the Adour, 32 miles northeast of Bayonne by rail (Map: France, S., C 5). The principal building is the former cathedral, rebuilt by Louis XIV in the seventeenth century. The site of the ancient Roman walls and moat is now occupied by the Promenade des Ramparts, and the mud baths of St. Pierre. Dax is famous as a health resort, owing to its thermal springs and baths of every description. It manufactures liquor, faience ware, chronometers, leather, and has a considerable trade in agricultural produce and timber. The scientist Charles Borda was born here in 1733. The ancient capital of the Tarbelli, Dax was known to the Romans as Aqua Tarbellica, afterward as Civitas Aquensium. It was held by the English from the twelfth to the fifteenth century. Pop., 1901, 10,329; 1911, 11,387.

DAY (AS. *dæg*, Icel. *dagr*, Goth. *dags*, OHG. *tac*, Ger. *Tag*; probably connected with Skt. *dah*, Lith. *dėgti*, to burn, OPruss. *dagas*, summer). Originally the space of time during which it is light, in contrast to the space of darkness or night. It now more usually denotes a complete alternation of light and darkness. It is the earth's rotation that causes these changes of light and darkness. The earth being a globe, only one-half of it can be in the sun's light at once; that half enjoys daylight, while the other half is in its own shadow, or in night; and by the earth's rotation the several portions of the surface have each their turn of light and of darkness.

Astronomers recognize more than one kind of day. If the time is noted when a particular fixed star is exactly south or on the meridian, when the same star comes again to the meridian the next day, the earth has made exactly one rotation, and the time that has elapsed is called a *sidereal day*. This portion of time is always of the same length; for the motion of the earth on its axis is strictly uniform and is perhaps the only strictly uniform motion that nature presents to us. Sidereal time, or star time, from its unvarying uniformity, is much used by astronomers. But the passage of a star across the meridian is not a conspicuous enough event for regulating the movements of men in general. It is not a complete rotation of the earth, but a complete alternation of light and darkness, that constitutes their day. This, which is called the *civil* or *solar day*, is measured between two meridian passages of the sun. On account of the apparent eastward motion of the sun relative to the fixed stars, it is found that when the earth has made one complete turn, so as to bring the meridian of the place to the same position among the stars as at noon the day before, the sun is still nearly one degree east of the meridian, and it takes the earth about four minutes more to move round so as to overtake it. Consequently the solar day is about four minutes longer than the sidereal day. If this eastward motion of the sun were uniform, the length of the solar day would be as simple and as easily determined as that of the sidereal. But the ecliptic or sun's path crosses the earth's equator, and is therefore more oblique to the direction of the earth's rotation at one time than another; and besides, as the earth moves in its orbit with varying speed, the rate of the sun's apparent motion in the ecliptic, which is caused by that of the earth, must also vary.

In consequence, the length of the solar day is constantly fluctuating; and, to get a fixed measure of solar time, astronomers have to imagine a sun moving uniformly in the celestial equator and completing its circuit in the same time as the real sun. The time marked by this imaginary sun is called *mean solar time*; when the imaginary sun is on the meridian, it is *mean noon*; when the real sun is on the meridian, it is *apparent noon*. It is obvious that a sundial must show apparent time, while clocks and watches keep mean time. Only on four days of the year do these two kinds of solar time coincide. In the intervals the sun is always either too fast or too slow; and the difference is called the *equation of time* (q.v.), because, when added to or subtracted from apparent time, it makes it equal to mean time. The mean solar day is divided into 24 hours, each of which is further divided into 60 minutes of 60 seconds each. A sidereal day, we have seen, is shorter; its exact length is 23 hours, 56 minutes, 4 seconds of mean solar or common time. Astronomers divide the sidereal day also into 24 hours, which are of course shorter than common hours. In the course of a civil year of 365 days the earth turns on its axis 366 times, or there are 366 sidereal days. Astronomers reckon the solar day as beginning at noon and count the hours from 0 to 23. The civil day begins at midnight, and the hours are counted in two divisions of 12 each. The ecclesiastical day was formerly reckoned from sunset to sunset. See INTERNATIONAL DATE LINE; TIME.

To find the day of the week for any date, past or future, there are several methods, but the simplest and most easily understood is as follows: First, there is a "constant" for the *style*—for new style it is 0, for old style 4. (In English chronology new style begins 1752, September 14.) Then there is a "constant" for each month—for January, 1 (in leap years, 0); for February, 4 (in leap years, 3); for March, 4; for April, 0, for May, 2; for June, 5; for July, 0, for August, 3; for September, 6; for October, 1; for November, 4; for December, 6. The month constants are the same in both styles. Now (for new style), multiply the number representing the century by 5, and add one-fourth to the product (omitting fractions). Next take the number of the odd years (i.e., the last two figures of the year number), and add one-fourth (omitting fractions); also the day of the month. Then add all these numbers together and finally divide the sum by 7; the remainder will give the day of the week, the remainder 1 showing the first day of the week, or Sunday; the remainder 2, Monday, etc., no remainder showing the seventh day of the week, or Saturday. Example: What is the day of the week for January 1, 1901?

Constant for new style	6
Constant for the month (Jan.)	1
Century number (19) multiplied by 5	95
Add one-fourth of 19	4
Odd years	1
Add one-fourth of 1	0
Day of the month	1
Total	108

Divide 108 by 7, and the remainder is 3; so the year 1901 must begin on the third day of the week, or Tuesday.

For old style the constant is 4, and the number of the century is multiplied by 6, without addi-

tion of the one-fourth. The other numbers are taken as in new style. Example for old style: On what day of the week did Columbus land on his voyage of discovery (Oct. 12, 1492)?

Constant for old style.....	4
Constant for October.....	1
Century number (14) multiplied by 6.....	84
Old years (92) one-fourth added.....	115
Day of the month.....	12
Total.....	216

Divide by 7, and the remainder is 6; i.e., the required day is the sixth day of the week, or Friday.

For leap years care must be taken in both old and new style to reduce the constants for January and February by one. See CALENDAR.

DAY. In law, the period of time between midnight and midnight within which a specified legal act may be performed. This entire period of 24 hours is the "natural" day. The "artificial" or conventional day (*dies artificialis*), or the "legal" day, as it is sometimes called, varies according to the nature of the act to be performed. Coke, referring to the day of the appearance of parties in a suit, described it as extending from sunrise to sunset. For many purposes the legal day is limited to the usual business hours, as of a bank or other business house, and its length is often determined by the hours observed by the community, or artificially determined by the usage of a particular calling. Thus, the day of the stock exchange means the hours (say from 10 A.M. to 3 P.M.) within which deliveries of stock and settlements must be made, in order to avoid forfeiture or other penalty. Usually the legal day is coextensive with the natural day.

Court days are those days of the year in which courts may lawfully sit and process issue, though in some parts of the United States the expression is used to describe the days on which the courts actually sit. In England and the United States Sundays and certain holidays are generally not court days (*dies non juridici*), excepting for such acts as are necessary to the preservation of the peace. By a legal fiction a day is for many purposes regarded as a point of time, and a fraction of a day disregarded. See DIES NON; TIME, STANDARD.

Law day. The last day in which a mortgage is redeemable at law as distinguished from equity. The date of payment of a mortgage debt is usually fixed, and at common law, if not paid on the day, the mortgage was forfeited and the title of the mortgagee became absolute. In order to avoid the harshness of this rule the courts of equity interposed by permitting the mortgagor to redeem after such forfeiture on paying the amount of the mortgage debt with interest. See EQUITY OF REDEMPTION; MORTGAGE.

Days of Grace. The time at which a note is actually due, or at maturity, is in general by mercantile custom three days after the time expressed on the face of it, the additional days being called days of grace. If the third day of grace fall on a Sunday, the note is payable the day before, excepting where by statute it is provided that it shall be payable on Monday. If it fall on a holiday, the note is payable the day after. The uniform Negotiable Instruments Law in force in most of the States abolishes days of grace. See GRACE, DAYS OF.

DAY, ARTHUR LOUIS (1869-). An

American physicist, born at Brookfield, Mass. In 1892 he graduated from Yale University, where he afterward served as instructor in physics (1894-97). From 1897 to 1900 he was a member of the staff of the Physikalisch-Technische Reichsanstalt at Charlottenburg, Germany. He then served for six years as physical geologist on the United States Geological Survey and in 1907 became director of the Geophysical Laboratory of the Carnegie Institution at Washington. He published several physical and geophysical researches at high temperatures, including *High Temperature Gas Thermometry* with Robert B. Sosman (1911).

DAY, BENJAMIN FRANKLIN (1841-). An American naval officer, born in Plymouth, Ohio. He attended the United States Naval Academy in 1858-61, during the Civil War served with the West Gulf (1862-64) and North Atlantic (1864-65) blockading squadrons, and attained the rank of lieutenant commander in 1866. In 1876 he became commander, in 1891 captain, in 1899 rear admiral, and in 1900 was retired from the service. From 1897 to 1900 he was a member of the Naval Examining and Retiring boards.

DAY, CLIVE (1871-). An American university professor and writer on economic history, born at Hartford, Conn. After graduating from Yale University in 1892 he took postgraduate studies there and at the universities of Berlin and Paris, taught history and economics at the University of California for three years and economics at Sheffield Scientific School (Yale) for two years, and in 1907 was appointed professor of economic history in Yale University. He is author of *Policy and Administration of the Dutch in Java* (1904) and *History of Commerce* (1907).

DAY, GEORGE EDWARD (1815-1905). An American theologian. He was born in Pittsfield, Mass., graduated at Yale in 1833 and in 1838 at the Yale Divinity School, where he became assistant instructor in sacred literature. From 1840 to 1851 he was pastor of churches in Marlboro and Northampton, Mass.; from 1851 to 1866 he occupied the chair of biblical literature in Lane Theological Seminary; and then that of Hebrew language and biblical theology in Yale Divinity School, where he founded in 1891 the Historical Library of Foreign Missions. From 1863 to 1871 he was editor of the *Theological Eclectic* (afterward merged in the *Bibliotheca Sacra*) and, besides contributions to periodicals, published a translation (1871) of the *Theology of the New Testament* of Van Oosterzee; an American edition (1883) of Oehler's *Theology of the Old Testament*; and other works.

DAY, HENRY NOBLE (1808-90). An American author and educator. He was born at Washington, Conn.; graduated at Yale College in 1828, at the Yale Divinity School in 1834, and was ordained to the Congregational ministry. He became professor of sacred rhetoric in Western Reserve College in 1840 and was president of the Ohio Female College from 1858 to 1864. Besides numerous contributions to periodical literature, his works include: *The Art of Elocution* (1844); *The Art of Rhetoric* (1850); *Elements of Logic* (1867); *The Art of Discourse* (1867; 1868); *The Science of Esthetics* (1872); *The Science of Thought* (1886); *Elements of Mental Science* (1889); *Science of Education* (1889).

DAY, HOLMAN FRANCIS (1865-). An

American author, born at Vassalboro, Me., and a graduate of Colby College (class of 1887). In 1889-90 he was managing editor of the publications of the Union Publishing Company, Bangor, Me. He was also editor and proprietor of the *Dexter (Me.) Gazette*, a special writer for the *Lewiston (Me.) Journal*, Maine representative of the *Boston Herald*, and managing editor of the *Lewiston Daily Sun*. In 1901-04 he was military secretary to Gov. John F. Hill of Maine. His writings include: *Up in Maine* (1901), verse; *Pine Tree Ballads* (1902); *Kin O'Ktaadn* (1904); *Squire Phin* (1905; 1913), a novel dramatized as *The Circus Man* and produced in Chicago in 1909; *Rainy Day Railroad War* (1906; 1913); *The Eagle Badge* (1908); *King Spruce* (1908); *The Ramrodders* (1910); *The Skipper and the Skipped* (1911); *The Red Lane: A Romance of the Border* (1912).

DAY, JAMES ROSCOE (1845-). An American educator, born at Whitneyville, Me. He studied at Bowdoin, and was in 1872 ordained a minister of the Methodist Episcopal church. He was pastor at Bath, Me., 1872-74; Portland, Me., 1876-78; Boston, 1881-82; New York, 1883-85 and 1889-93; and in 1893 became chancellor of Syracuse University. He was elected Bishop in 1904, but resigned. He is the author of *The Raid on Prosperity* (1907).

DAY, JEREMIAH (1773-1867). An American educator, born in New Preston, Conn. He graduated at Yale in 1795, was made professor of mathematics and natural philosophy there in 1801, and was president of the college from 1817 to 1846. He published *An Introduction to Algebra* (1814; 7th ed., 1866); *Navigation and Surveying* (1817); and several works on philosophy.

DAY, JOHN (1574-c.1640). An English dramatist. He was born at Cowston, and in 1592 was admitted to Caius College, Cambridge, which he left the next year without a degree—expelled for stealing a book. Between 1598 and 1603, as a playwright, he collaborated with Dekker, Chettle, and others on at least 22 plays, of which only *The Blind Beggar* (acted 1600, published 1609) seems to have been printed. Day is best known for a vivacious comedy, *The Isle of Gulls* (1606), which draws its plot from Sir Philip Sidney's *Arcadia*; and for a dainty masque, *The Parliament of Bees* (1641, but probably written much earlier), upon which he can base his best claim to long remembrance. Consult: *Works*, ed. by Bullen (London, 1881); Swinburne's enthusiastic study in the *Nineteenth Century* (October, 1897); Ward, *History of English Dramatic Literature* (London, 1899), and *Cambridge History of English Literature* vol. vi (Cambridge and New York, 1907-13).

DAY, STEPHEN. See DATE, STEPHEN.

DAY, THOMAS (1748-89). An English author. He was born in London and was educated at Corpus Christi College, Oxford. He strongly sympathized with the Americans at the time of the Revolutionary War and expressed his views in *The Devoted Legions* (1776) and *The Desolation of America* (1777); but he also strongly denounced American negro slavery in *Reflections on the Present State of England and the Independence of America* (1762) and in his famous poem, *The Dying Negro*. He will be remembered, however, chiefly as the author of the famous *History of Sandford and Merton* (3 vols., 1783-89) and the *History of Little Jack* (1788). He was a character of remarkable nobility and expended almost his entire fortune

in philanthropy. His eccentricities, due to his refusal to compromise with worldliness, and his adherence to the doctrines of Rousseau, led him into many extraordinary experiences. He was killed by being thrown from a fractious colt, while testing a theory that all animals could be managed by kindness. His *Poems* may be found in vol. lviii (1822) of the *British Poets*. Consult his *Life* by Keir (London, 1791) and that by Blackman (ib., 1862).

DAY, WILLIAM A. An American lawyer and capitalist, born at Wilmington, Del. He was Auditor of the United States Treasury Department from 1885 to 1889. As special assistant to the Attorney-General of the United States (1901-03) and as Assistant Attorney-General of the United States (1903-05) he aided and had charge of the prosecution of trust cases under the interstate commerce and antitrust laws. He served as vice president of the Equitable Life Assurance Society of the United States from 1906 to 1911 and thereafter as president. He was also chosen a director of the Mercantile Trust Company, the Lawyer's Title Insurance and Trust Company, and the Equitable Trust Company.

DAY, WILLIAM RUFUS (1849-). An American statesman and jurist. He was born at Ravenna, Ohio, graduated at the University of Michigan in 1870, studied law there, and in 1872 was admitted to the Ohio bar. He was a judge of the Court of Common Pleas from 1886 to 1890. In 1897 he was appointed Assistant Secretary of State and in 1898 Secretary of State, serving from April to September, when he was named chairman of the United States Peace Commission which arranged terms of peace with Spain. From 1899 to 1903 he was judge of the United States Circuit Court (6th circuit) and in February, 1903, was appointed an associate justice of the United States Supreme Court.

DAYAK. See DYAK.

DAYAL, दि'ल. See DHYAL BIRD.

DAY BLINDNESS, or HEMERALOPIA. See SIGHT, DEFECTS OF.

DAYE, dā, or **DAY, STEPHEN** (c.1610-68). The first printer in the English colonies in America. He was born in London, was there a printer's apprentice, and in 1639 assumed charge at Cambridge, Mass., of the printing apparatus which the Rev. Jesse Glover had succeeded in obtaining for the Colony. He continued in this post until 1649, when for reasons not ascertainable he was superseded. In 1641 the General Court ordered that he, "being the first that sett upon printing, is granted three hundred acres of land." His presswork is tolerable, according to Thomas (*History of Printing in America*, 1810), but his composition exceedingly deficient. His first production was a broadside, *The Freeman's Oath*, followed by an *Almanack*. The next was the first book printed in America, *The Whole Book of Psalmes, faithfully translated into English Metre* (1640). For a list of his other publications, consult Thomas, *The History of Printing in America* (Worcester, 1810), and Timperley, *A Dictionary of Printers and Printing* (Manchester, 1839).

DAYFLY. See MAY FLY.

DAY LILY (so called because the flowers usually last one day), *Hemerocallis*. A genus of plants of the family Liliaceae, with bell-shaped flowers. Several species are cultivated

in flower gardens, especially the fragrant yellow day lily, or lemon lily (*Hemerocallis flava*), a native of Hungary, Siberia, and the north of China. *Hemerocallis fulva*, a native of Europe and temperate Asia, produces more abundant foliage and orange-colored flowers without fragrance. Both species are fibrous-rooted perennials, with linear leaves. Five or six other species are met with in cultivation, forming a group of fine, hardy perennial ornamentals. *Hemerocallis aurantiaca* is said to be the finest of all the day lilies. *Funkia subcordata*, a common Japanese species extensively cultivated, is also known as day lily. It has broad leaves and panicles of white flowers which have an orange-like odor.

DAY NURSERY. See NURSERY. *Day Nursery*.

DAY OF ATONEMENT or EXPIATION. See ATONEMENT.

DAY OF BARRICADES. The name given to an insurrection of the Parisians on May 12, 1888, during the War of the Three Henrys. Henry III had fortified himself in the Louvre, against Henry, Duke of Guise. The city guards failed him, the populace pushed forward barricades, and the Swiss Guards were saved from massacre only by the intervention of the Duke of Guise, and the King had to flee. The insurrection against Mazarin, Aug. 27, 1648, is also known as the Day of the Barricades. Consult Lavisse, *Histoire de France*, vol. vi, part i; vol. vii, part i (Paris, 1904, 1906).

DAY OF SECTIONS. The name sometimes given to the insurrection of 13 Vendémiaire, an attempted assault on the Tuileries by the National Guard, on Oct. 4, 1795, in order to compel the Convention to change its measures. The uprising was overcome by Napoleon, who on that occasion received its first appointment. After the first encounter the forces of the Convention disarmed the various sections.

DAY OWL. An owl often seen abroad during the day. See HAWK OWL.

DAYSMAN. An arbitrator, umpire, or judge. The term is of Anglo-Saxon origin and is still employed in the northern part of England to describe an unofficial judge or arbitrator to whom a matter in dispute is referred. It was in more common use in Wiclif's day, from whom it was taken over into the Authorized Version of the Bible, in the exclamation of Job: "Neither is there any daysman betwixt us, that might lay his hand upon us both" (Job ix. 33). The origin of the term is obscure.

DAY'S WORK. In nautical language, the navigation work done every 24 hours. The term is frequently restricted to the operation of making the dead-reckoning computations. See NAVIGATION.

DAYTON. A city in Campbell Co., Ky.; on the Ohio River, opposite Cincinnati, Ohio, and on the Chesapeake and Ohio Railroad (Map: Kentucky, F 1). It contains the Speers Memorial Hospital. The city has large plants for the manufacture of watchcases and pianos. Settled in 1849, and incorporated the same year under the name of Jamestown, Dayton is now governed under a charter of 1893, by a mayor, elected every four years, and a city council. Pop., 1900, 6104; 1910, 6979.

DAYTON. A city and the county seat of Montgomery Co., Ohio, situated in the rich and populous Miami valley, on both banks of the

Miami River, 50 miles northeast of Cincinnati and 61 miles southwest of Columbus (Map: Ohio, B 6). Its steam railroads are the Erie, the Cincinnati, Hamilton, and Dayton, the Pittsburgh, Cincinnati, Chicago, and St. Louis, and the Dayton and Union. Seven electric traction lines enter the city, giving it quick communication with all parts of the State. The city's area is 17 square miles. The original plat was regularly laid out with broad streets. There are 210 miles of improved streets, of which 75 miles are paved with asphalt, brick, or stone. The city has 105 miles of storm sewers and 195 miles of sanitary sewers. Natural gas is obtained from West Virginia fields and is largely used for domestic and heating purposes. The principal public buildings are the old courthouse, modeled after the Parthenon, the new courthouse, Steele High School, Dayton State Hospital, Miami Valley Hospital, Memorial Hall, Stivers High School, and the Public Library and Museum. The last named, standing in Cooper Park, contains 70,000 volumes and is supplemented by two branch libraries. There are seven national banks, five State banks, two loan and trust companies, and 22 building and loan associations with deposits of over \$25,000,000. The park system is composed of Cooper Park, Van Cleve Park, South Park, Robert's Boulevard, McCabe's Park, McKinley Park, and White City, with access to the grounds of the National Military Home and the private estate of Hills and Dales. The National Military Home accommodates 6000 veterans of the Civil and Spanish-American wars. There are three high, two manual-training, and 22 district schools, with an enrollment of about 18,000. The Catholic church maintains a boys' college, a girls' academy, and 11 parochial schools. Dayton ranks third among Ohio cities in invested manufacturing capital, in value of manufactured product, in workmen employed, and in wages paid. Manufactured articles include cash registers, aeroplane, carriages, wagons, automobiles, sewing machines, computing scales, railway cars, and boilers. The city government is unique. It is administered by a commission of five, who are elected at large on a nonpartisan ticket. They are the policy-determining body of the city, who in addition to these duties select a city manager, who is personally responsible for the administration of the government. The salaries of the commissioners are nominal, but the manager receives \$12,500 a year. He appoints his subordinates, the heads of the five departments of law, finance, welfare, service, and safety being the most important. This government is in accordance with a home-rule charter. The schools and courts are controlled by State law. Annual income amounts to \$1,125,000 for current operating costs plus \$550,000 for debt service. The city has a bonded debt of \$5,473,000, contracted for public improvements. The schools have an annual income of about \$500,000 and a bonded debt of \$630,000. Surrounding territory is thickly settled. Many of the industrial and professional classes live beyond the city limits. The death rate is 14.2. The water supply, furnished by the Holly system of deep wells and under municipal ownership, is pure and abundant. Pop., 1910, 116,577; 1914 (est.), 123,794.

Dayton was settled in 1796 by a party from Cincinnati. The original town plant was laid

out by Daniel Cooper. In 1805 the town was incorporated and named in honor of Gen. Jonathan Dayton, one of the early settlers. The first city charter was granted in 1841. The city was swept by a disastrous flood on March 25, 1913, in which 84 people lost their lives and a property loss of \$128,000,000 was sustained. Public-spirited citizens raised a fund of \$2,000,000 for flood prevention within two weeks after the waters had receded. A system of vast dry reservoirs costing \$17,000,000 is being built. This will entirely eliminate even minor danger in the entire Miami valley. Consult R. W. Steele, *History of Dayton* (1889), and Mary D. Steele, *History of Dayton* (1896).

DAYTON. A city and the county seat of Rhea Co., Tenn., 38 miles northeast of Chattanooga, on the Queen and Crescent Route and on the line of the Tennessee River Navigation Company (Map: Tennessee, F 3). It is in a rich iron and coal mining, cattle-raising, and fruit-growing region, and has manufactories of hosiery, chairs, boxes, brooms, and flour. There are also machine shops, furnaces, brickyards, and canneries. The city has a fine courthouse and owns its water works. Pop., 1890, 2719; 1900, 2004; 1910, 1991.

DAYTON. A city and the county seat of Columbia Co., Wash., 30 miles by rail northeast of Walla Walla, on the Touchet River, on the Northern Pacific Railroad, and on the line of the Oregon-Washington Railroad and Navigation Company (Map: Washington, H 3). It lies in a picturesque mountainous country, rich in agricultural products and live stock. There are large flouring mills and other manufacturing plants. The city has good water power. Pop., 1900, 2210; 1910, 2389.

DAYTON, JAMES HENRY (1846-). An American naval officer, born at South Bend, Ind. After graduating from the United States Naval Academy in 1866 he served in the navy in the various grades, becoming captain in 1900 and rear admiral in 1906. He commanded the *Detroit* (1897-99), the naval station at San Juan (1899-1900), and the *Chicago* (1901-03). He was president of the Naval Board of Inspection and Survey in 1904-05. He commanded the Philippine squadron of the Asiatic fleet from 1906 to 1907, when he became commander in chief of the Pacific fleet. He was retired in 1908.

DAYTON, JONATHAN (1760-1824). An American soldier and legislator, born in Elizabethtown, N. J. He graduated at Princeton in 1776, was admitted to the bar, was appointed lieutenant in a New Jersey regiment in 1777, served as aid to General Sullivan against the Six Nations, and in 1798 became a brigadier general in the United States army. He was a member of the New Jersey Assembly in 1786-87 and 1790 (being Speaker in 1790) and of the New Jersey Senate in 1789-90, and was a delegate to the Constitutional Convention of 1787. From 1791 to 1799 he was a member of Congress (being Speaker of the House from 1795 to 1799) and from 1799 until 1805 served in the United States Senate. He was accused of conspiracy with Burr, but was not tried. Dayton, Ohio, was named in his honor.

DAYTON, WILLIAM LEWIS (1807-64). An American politician, nephew of Jonathan Dayton. He was born in Somerset Co., N. J., graduated at Princeton in 1825, was admitted to the bar five years later, and began the practice

of the law in Trenton. He was a member of the State Council or Senate in 1836-37 and a judge of the State Supreme Court in 1838-41, and in 1842 was appointed to the United States Senate. He was reelected on the expiration of his term and took an active part with the Whigs in opposing the extension of slavery, the annexation of Texas, and the Fugitive Slave Law. In 1856 he was the Republican candidate for Vice President. He was Attorney-General of New Jersey from 1857 to 1861 and from then until his death was United States Minister to France. He became a regent of the Smithsonian Institution in 1861. His son, WILLIAM LOUIS DAYTON (died 1897), was Minister to Holland in 1882-85.

DAYTONA. A city in Volusia Co., Fla., 110 miles by rail south of Jacksonville, on the Atlantic Ocean, the Halifax River, the Jacksonville-Miami Canal, the Florida East Coast Railroad, and on the line of the Florida Coastal Island Navigation Company (Map: Florida, E 2). It is a popular summer and winter resort, has many fine homes and hotels, a library, and an Elks Home. The chief industries are orange and strawberry culture, gardening, fishing, and celery growing. The water works are owned by the city. Pop., 1900, 1690; 1910, 3082.

D'AZEGLIO. See AZEGLIO, MARCHESE D'.

DEACON (A.S. *deacon*, from Lat. *diaconus*, from Gk. *diakonos*, *diakonos*, attendant). A subordinate ecclesiastical officer. In apostolic times, the name was applied to those officials of the Church who had the charge of collecting and distributing the alms of the faithful and taking care of the poor and the sick (Acts vi. 1-8); and these seem to have been considered the characteristic functions of the diaconate as late as the Trullan Council of 692. Thus, we find St. Laurence, Archdeacon of Rome, in the middle of the third century, making the care of the poor and the attendance upon Sixtus, his bishop, at the altar, his principal occupation and his pride, and it was as a deacon that Athanasius attended his bishop at the first general Council of Nicea (325) and defended the faith against Arius. But that the office was not restricted to these functions may be inferred from the fact that immediately after its institution we find deacons teaching and even baptizing (Acts vi. 10; viii. 5, 38). It evidently included in very early times the duties of guarding the sacred assemblies from the presence of unworthy persons, receiving the oblations and bringing them to the priest, reading the epistle and gospel from the *ambo*, and the names of those who were inscribed on the diptychs for commemoration, and assisting in the administration of the holy Communion. In matters of external ministry they had a very wide range, which the Apostolic Constitutions sum up by saying that the deacon must be the ear, eye, mouth, hand, heart, and soul of the bishop. With the development of the subdiaconate and the minor orders, only the more important and honorable offices in and out of the Church were left to the deacon. Owing to their small number (in early times often not more than seven in one place), and to their immediate relations to the bishop, they began to assume considerable importance, and their pretensions had more than once to be restrained. The office of deacon as it existed in the early Church has been preserved in the Eastern churches with little modification. At the present time in the Roman Catholic church the office is practically of no

importance, as it is really nothing more than a step to the priesthood, which is usually administered almost immediately after ordination to the diaconate. The *Pontificale Romanum*, indeed, defines the duties of a deacon as ministering at the altar, baptizing, and preaching; but all duties specially belonging to the offices of deacon and subdeacon, including their special functions in a solemn mass, are in practice nearly always discharged by priests. The special ceremonies of the ordination of a deacon include the putting on of the dalmatic and stole, and the delivery to him of the book of the Gospels, as well as the laying on of the bishop's hands. In the Anglican church the imposition of hands and the delivery of the book of the Gospels are retained. The deacon, who must be 23 years of age, continues a year in the office except in special cases. Besides pastoral work, preaching, and baptizing, he may read a large part of the service: but in England he is not allowed to hold a benefice. In the Methodist Episcopal church the deacon is a member of an order of the ministry next below the elder. The deacons are elected by the annual conference and ordained by the bishop presiding. They may assist in the administration of the Lord's Supper, may administer the rite of baptism, solemnize marriage, and serve as traveling preachers. In the Congregational and Baptist churches one or more deacons are elected by the members of each church to distribute the elements in the Communion, to act as the advisers of the pastor, and as the almoners of the charities of the church. The nature of the office is the same in the Presbyterian church, where the deacons are elected by the congregation and ordained by the minister to assist the body known as the session of the church in the care of the poor and in the general management of the secular affairs of the church. In the Lutheran churches of the United States the deacon is a layman chosen to attend to the charities and temporalities of the congregation. Of recent years there have been introduced into the statute law of a number of the States provisions by which deacons, by virtue of their office, become legal trustees of church property for the congregation, whether incorporated or unincorporated. Consult. Seidl, *Der Diaconat in der katholischen Kirche* (Regensburg, 1884); Hort, *The Christian Ecclesia* (London, 1897); McGiffert, *The Apostolic Age* (New York, 1897); Lindsay, *The Church and the Ministry in the Early Centuries* (London, 1902).

DEACONESS. One of an order of women in the Christian churches. Traces of the order appear in apostolic times (Rom. xvi. 1. 1 Tim. v. 9 et seq.), and deaconesses were generally found in the early Christian communities. Their duties were in general to supplement the work of the deacons and perform for members of their own sex such services as could with less propriety be performed by men. They assisted at the administration of baptism, acted as doorkeepers on the women's side of the congregation, instructed the female catechumens, took charge of the sick and poor women, and were present at the interviews of the clergy with women. They were set apart for their work by laying on of hands and prayer by the bishop. In the earliest times widows were generally chosen, and it was considered seemly that a deaconess should be of mature years. The Council of Trullo (682) fixed the limit at 40. In the

Western church it was not introduced till the fourth century and always met with opposition, decrees of councils against the order being found as early as the fifth century, and by the eighth it had entirely disappeared. In the East it lingered longer, but the duties became much restricted. The modern development of the institution in the various Protestant churches of Europe and America dates from the third decade of the nineteenth century. In 1833 Pastor Theodor Fliedner of the United Evangelical Church of Prussia founded a deaconesses' home at Kaiserswerth in Rhenish Prussia, which has served as a model for similar institutions in many parts of the world. The inmates of these houses devote themselves to charitable work, but take no vows and are bound to no fixed term of service. Provision is generally made for their instruction and training, and they are under the supervision of an inspector or superior. In the Church of England much of the normal work of deaconesses is done by the various sisterhoods, though deaconesses have also been in existence since 1861. In America an order of deaconesses was established in St. Andrew's Parish, Baltimore, of the Protestant Episcopal church, in 1855. A canon was adopted by the General Convention in 1889, regulating the order and providing that members should have adequate preparation both technical and religious, which should extend over a period of two years. Training schools meeting this requirement are now maintained in New York and Philadelphia. The General Conference of the Methodist Episcopal church in 1888 made provision for the establishment of the order of deaconesses. There are now many homes belonging to that church in the United States. The Lutheran church also has several homes, the first having been organized in New York in 1852. The Presbyterian General Assembly in 1891 sanctioned the order. Consult: Potter, *Sisterhoods and Deaconesses* (New York, 1873); Robinson, *The Ministry of Deaconesses* (London, 1898); *The Church Quarterly Review*, No. 94, pp. 302 et seq. (ib., 1899); Golder, *History of the Deaconess Movement* (Cincinnati, 1903); *Year Book of the New York Training School for Deaconesses* (New York, 1892-1913). For the modern movement, consult *Addresses, Reports, Statements . . . of the United States, 1907* (Boston, 1907); Nutting and Dock, *History of Nursing* (New York, 1907). See **SISTERHOODS**.

DEAD, BOOK OF THE. The name given by Lepsius, and since generally applied, to the collection of magical and religious texts which, according to ancient Egyptian belief, formed a sort of guide and protection for the dead in their wanderings through the Lower World. It was placed in or near the coffin or in the arm-pits of the mummy. Hundreds of copies exist, some containing only a few chapters, while other rolls are over 100 feet in length. Some of these copies are very elaborately written and (especially in later times) are ornamented with colored pictures. The Egyptians themselves called the collection the book of 'coming forth in the daytime' (*piret em h(r)ou*), from the opening words of the first chapter, which promise the soul of the deceased the power of visiting the Upper World. This title does as little justice to the varied contents of the collection as that erroneously proposed by Champollion and De Rougé ('the funerary ritual'). A better translation of its name would be 'The Book of the

Coming Forth by Day' (or during the day), or, perhaps still better, as Naville suggests (*The Old Egyptian Faith*, p. 164), 'The Book of the Coming out from the Day.' This strange collection is not to be regarded as a handbook of Egyptian theology; its character is chiefly magical, although some hymns to the gods are incorporated in it. The individual chapters date from various periods, although most of them seem to have come down from the time of the pyramids; some, perhaps, even from the prehistoric age. Specimen titles of the chapters are as follows: "The Chapter of the Coming forth from the Day and of Living again after being Dead," and "The Chapter of Going into and Coming out of the Lower World." A few formed part of the earliest collection of magical funerary texts inscribed on the walls inside the royal pyramids of the sixth dynasty; but the majority belong to a different corpus, which can be seen in process of gradual formation under the twelfth dynasty. At that time these texts were written on the sarcophagi; under the eighteenth dynasty they were written in papyri, although the selection and order of the chapters fluctuated. A fixed canonical form, limited to about 165 chapters, was established in the twenty-sixth dynasty, though nothing is known in regard to the origin or the formation of the canon. Papyri of this late date were the first published. (Consult Lepsius, *Das Todtenbuch der Aegypter*, Leipzig, 1849, republished by Davis, 1894, and De Rouge, *Rituel funéraire des anciens Egyptiens*, Paris, 1861-76.) Eventually it became evident that all late manuscripts were very corrupt, and in 1876 E. Naville was appointed by the Congress of Orientalists to prepare a critical edition of the text in use from the eighteenth to the twentieth dynasty. The Prussian government, with characteristic liberality, lent its support to the work. The results of Naville's labor, which appeared in 1886, under the title, *Das ägyptische Todtenbuch der 18ten bis 20ten Dynastie*, show that, even at the period covered by the learned editor's investigations, the texts were hopelessly corrupt and can only be understood by tracing them further back. Many facsimiles of manuscripts with pictures have been published, chiefly by Budge (*Papyrus of Ani*, etc.). The best translation is that of Lepage Renouf, which gives a complete translation, commentary, and notes (London, 1890); those of Birch (ib., 1867), Pierret (Paris, 1882), and Budge (London, 1898; cheaper ed., 1901) are not critical. For a concise statement, consult Naville, *The Old Egyptian Faith*, pp. 159-207 (New York and London, 1909). For a more complete bibliography, consult Steindorff, *Religion of the Ancient Egyptians*, p. 133, note 2.

DEAD, BURNING OF THE. See CREMATION OF THE DEAD.

DEAD, JUDGMENT OF THE (in ancient Egypt). The *Book of the Dead* contains, in chap. 125, which is one of the longest in the book, a picture representing the judgment which the defunct, before entering into the fields of the blessed, will undergo in the Lower World, in the presence of Osiris and 42 judges of monstrous form, who are at hand to devour the guilty and to drink his blood. Anubis, the god of the dead, and Thoth, the god of wisdom, examine the deceased by weighing his heart in the sacred "balance of justice." The famous "negative confession" enumerates 42 capital sins from which the deceased must be free, or at least

must claim to be free. Should he fail to pass the ordeal, he is either handed over to be devoured by the 42 judges mentioned above or by the monster, part hippopotamus, part crocodile, and part lion, which represents the Egyptian Cerberus, or is thrown into the fiery lake. This judgment scene is frequently represented. Should the deceased be found to be pure in heart, he is allowed to mingle with the spirits and the gods, and is supplied with "food, offerings, drinks . . . and clothes of fine linen." A very confused passage of Diodorus would seem to state that such a judgment was held on earth at the interment of the deceased and that a well-founded accusation could deprive even a king of his sepulture. The underlying truth seems to be that a ceremony, imitating the judgment, with priests in the mask of gods, and with the reading of the negative confession and the following acquittal, may sometimes have formed part of the funerary ritual.

DEAD COLOR. In painting, any color that has no gloss or reflecting quality.

DEAD-LETTER OFFICE. A division of the Post-Office Department, under the control of the Fourth Assistant Postmaster-General at Washington, D. C., to which unclaimed or undeliverable letters and packages are sent from local post offices. The official record for the year 1913 showed the receipt by this office of 13,214,346 letters and parcels. Nearly 7,000,000 of these letters and parcels were destroyed by the department, either because they did not contain the names of the senders or were of no value. Upward of 945,000 letters, containing money, drafts, checks, notes, money orders, or postage stamps, to the value of \$7,584,478, were returned to their senders, and the department derived as revenue from dead mail matter, which could not be returned, nearly \$32,000. During the year over 12,000 magazines, illustrated papers, picture cards and the like, which could not be returned to the owners, were distributed among the charitable institutions of the District of Columbia.

In the United Kingdom there are many centres for dealing with unclaimed letters. The principal office is in London. Letters containing nothing of value are at once destroyed. In the year 1905-06 over 1,000,000 letters could neither be delivered to the addressees nor returned to the senders.

DEADLY AG'ARIC. See FUNGI, EDIBLE AND POISONOUS.

DEADLY NIGHTSHADE. See BELLADONNA.

DEAD NETTLE (*Lamium*). A genus of plants of the mint family. The name "dead nettle"—popularly in some parts of England and Scotland, "dee nettle"—is also often extended to the genus *Galeopsis*, very similar to *Lamium galeopsis*, and sometimes distinguished by botanists as hemp nettle. *Lamium purpureum*, *Lamium album*, and *Galeopsis tetrahit* are very common weeds. The first two are sometimes boiled as potherbs in Sweden. The name is derived from the popular belief that the hairs of the dead nettle, particularly when the plant is dried, as in haymaking, cause irritation in the hands of persons handling them, which, extending through the system, occasionally terminates in death. They do not, however, seem to possess any poisonous property. Several of the species have become naturalized in various parts of the United States.

DEAD RECKONING. The computation of the ship's position from her movements as recorded in the log and without having a recourse to astronomical observations. The chief elements from which the reckoning is made are: the point of departure, i.e., the latitude and longitude sailed from or last determined; the course or direction sailed in (ascertained by the compass); the rate of sailing, measured from time to time by the log (q.v.); and the time elapsed. The various principles or methods followed in arriving at the reckoning from these data are known as *plane sailing*, *middle-latitude sailing*, etc. (See **SAILINGS**.) But the data themselves are liable to numerous uncertainties and errors, owing to currents, leeway (q.v.), fluctuations of the wind, changes in the declination of the compass, etc.; and therefore the results arrived at by the dead reckoning have to be corrected as often as is possible by observation of the heavenly bodies. See **NAVIGATION**; **LATITUDE AND LONGITUDE**; **COMPASS**.

DEAD SEA (Heb. *yām, sea*, or *yām ham-melach*, salt sea, Gk. *θάλασσα τῶν ἁλῶν*, *thalassa tōn halōn*, salt sea, *ἀσφαλτίτις λίμνη*, *asphaltitis limnē*, asphalt lake, *Σοδομίτις λίμνη*, *Sodomitis limnē*, lake of Sodom, or *θάλασσα νεκρά*, *thalassa nekra*, Dead Sea, Lat. *mare mortuum*, Dead Sea, Ar. *Bahr Lūt*, sea of Lot). An inland lake, on the southeastern borders of Palestine (Map: Palestine, C 4), in which the course of the Jordan terminates. It forms a part of the deepest chasm on the earth's surface and has no outlet. The Jordan valley begins to sink below the level of the Mediterranean in the neighborhood of Lake Huleh, about 90 miles north of the Dead Sea. The Lake of Gennesaret is 680 feet below sea level, and the Dead Sea about 1202 feet. On the east the high plateau of Moab rises 3100 feet above the Mediterranean, about 4400 feet above the Dead Sea; on the west the plateau of Judea rises about 2000 feet above the sea. The shores are abrupt, in many places precipitous; the formation is chiefly limestone, though on the eastern side sandstone also appears, and except in the deltas formed by larger streams, on the peninsula, and at Engedi, where there is water, there is scarcely any vegetation or animal life. The Dead Sea is fed mainly by the Jordan from the north, draining the larger part of Palestine; several smaller streams also empty into it, chiefly from the east. The quantity of water poured into this closed sea by the various streams is estimated at 6,000,000 tons daily, all of which is carried off by evaporation. The most important are the Wady Zerka Ma'in (the stream of Callirrhoe), Wady Mojib (Arnon, q.v.), Wady-el-Dera'a and Wady-el-Hesa on the east; Wady Tufleli on the south, Wady-el-Nar (Kedron) on the west. The length of the Dead Sea is 47 miles, its greatest breadth $9\frac{1}{2}$ miles, and its area 340 square miles. The southern end is a swampy tract covered by water in the rainy season, so that the actual length of the lake varies by 2 or 3 miles according to the time of the year. From the eastern shore a peninsula juts out into the lake and extends towards the north for about 12 miles. De Sauley, De Luyne, and others have called this peninsula *al Lisan*, 'the tongue,' but it is apparently the southern bay to which the expressions *al lisan*, 'the tongue,' and *lisan al bahr*, 'the tongue of the sea,' refer, just as in the case of the corresponding Hebrew words in Josh. xv. 2, 5, xviii. 19, as Schmidt was told on the peninsula. It is formed

of white calcareous marl, salt, and gypsum, and rises 40 to 80 feet above the water, but with a range of hills attaining a height of 300 feet. South of this peninsula the lake is comparatively shallow (10 to 18 feet), while the greatest depth north of it is 1300 feet. In the southwestern corner is Jebel Uadum, or the Mountain of Sodom, over 4 miles in length, $\frac{1}{2}$ mile wide, and from 400 to 600 feet in height. Inside this mountain there is an interesting grotto in the salt. The level of the water varies considerably with the season; during the last 40 years it seems to have been rising, at least in the northern part of the lake. The water contains at the depth of 1000 feet 27 per cent of solid substances—common salt, chloride of magnesium, chloride of calcium, and many other ingredients. From the chloride of magnesium the water receives its bitter taste, from the chloride of calcium its oily appearance and feeling. The specific gravity is 1.166, and the human body easily floats on the surface. The lake contains no life of any kind, with the exception of a few microbes, and sea fish put into its waters soon die. The Dead Sea has presented substantially the same appearance since the beginning of the Quaternary period. As a result of the elevation of the whole region out of the sea, after the close of the Eocene period, a fault or fracture was produced running the whole distance from the Gulf of Akabah to the base of Mount Hermon. During the Pleiocene and Pleistocene epochs the character of the depression was considerably changed. The large rainfall and the melting of the snows of Mount Lebanon, during the subglacial period, added greatly to the volume of water pouring into the Jordan valley and formed a lake that included Lake Huleh, the Lake of Galilee, and the Dead Sea. There is evidence that the water once stood as much as 1180 feet above its present level. At a subsequent stage it seems to have been only 378 feet higher than now. As the rainfall diminished and the climate grew warmer, evaporation increased. Beds of bituminous marl are found near the lake, and bituminous masses float on its surface, particularly at times when there are seismic disturbances. The region is not, as has been supposed, volcanic. The subsidence of the land in the southern part of the lake may have given rise to the story of the four cities that were overthrown, Sodom, Gomorrah, Admah, and Zeboim (Deut. xxix. 23). The name "Bahr Lūt," or its equivalent, cannot be traced beyond the period of Moslem occupancy. In the Fourth Book of Ezra (v. 7) the lake is called *mare Sodomiticum*. This name is also found in the Talmud and in Edrisi (iii. 5). There is no passage in the canonical books of the Bible distinctly connecting the Dead Sea with Sodom and Gomorrah. "The vale of Siddim" is explained in Gen. xiv. 3 as "the Salt Sea." It is held by some scholars that this is a gloss coming from a copyist who erroneously supposed that the lake was once in historic times dry land. By others it is maintained that "The Vale of Siddim" refers to what now is the southern end of the sea, below the peninsula, which appears to have been formed in historic times. But the writer of Gen. xiv. did not think of an inundation as causing the destruction of Sodom and Gomorrah, but of a rain of fire and brimstone from heaven.

There has never been much navigation on the Dead Sea. Strabo (vi. 2) and Diodorus (xix, 25) tell of the floats on which men fished for

bitumen. The Bordeaux pilgrim saw no boat in 334 A.D.; but on the Madaba map (sixth century) there are two. In 1161 Maurice, Duke of Montreal, permitted the Knights of St. John to navigate on the Dead Sea without paying any customs duties. In the sixteenth century floats are mentioned again. Costigan in 1835, Moore and Beke in 1837, Symonds in 1841, and Molyneux in 1847 ventured out in boats, but did not get so far as the peninsula, and Costigan and Molyneux lost their lives in the attempt. Four scientific expeditions—those of Lynch in 1848, De Luynes in 1864, Schmidt in 1905, and Abel in 1911—have visited all parts of the sea, including the southern bay. In the twelfth and thirteenth centuries there were several centres of the sugar industry at the southern end, on the peninsula, between this and the Arnon, and near Jericho. In one of these, north of the peninsula, an aqueduct and the remains of a building, probably going back to Roman times, were discovered by Schmidt. The most fruitful journeys around the lake on land were those of De Saulcy in 1861 and Tristram in 1871. It is interesting to observe that the desolation and sterility characteristic of the Dead Sea were regarded as something abnormal, and that prophets predicted a future change to fertility and life through a fountain flowing down from the temple in Jerusalem and healing the waters (Ezek. xlvii. 1-12, Zech. xiv. 8, and perhaps also Joel iii. 18). Consult: Reland, *Palæstina*, vol. i, p. 238 (1714); Schubert, *Reise in das Morgenland* (1837); Ritter, *Erdkunde*, vol. ii (1850); Tobler, *Topographie von Jerusalem*, vol. ii, pp. 906 ff. (1854); Fraas, *Das Todte Meer* (1867); Lynch, *Narrative of the United States Expedition to the Dead Sea* (1849); De Saulcy, *Voyage autour de la Mer Morte*, vol. i (1853); De Luynes, *Voyage d'exploration à la Mer Morte* (1874 et seq.); Stoppani, *Il Mare Morto* (1875); Tristram, *The Land of Moab* (2d ed., 1874); Falucci, *Il Mare Morto e la Pentapoli del Giordano* (1881); Guérin, *Description de la Palestine: Samarie* vol. i (1874); Hull, *Mount Seir* (1889); Gautier, *Autour de la Mer Morte* (1901); Schmidt, *Fifth Annual Report of the Director of the American School for Oriental Study and Research* (1905); id., "The River Arnon," in *Journal of Biblical Literature* (1905), and "The East Coast of the Dead Sea and the Ruins in Wadi Suweil," ib. (1906); Abel, *Une croisière autour de la Mer Morte* (1911); Blanckenhorn, *Das Todte Meer* (1898); id., *Naturwissenschaftliche Studien am Toten Meer und im Jordanthal* (1912).

DEADWOOD. A city and the county seat of Lawrence Co., S. Dak., in the extreme western part of the State, about 170 miles (direct) west of Pierre, on the Chicago and Northwestern, and the Chicago, Burlington, and Quincy railroads (Map: South Dakota, A 3). It has a United States assay office, where \$8,000,000 in gold is handled annually; the Stilwell Curio Museum; a Carnegie library, and a government building. The city is the distributing and financial centre for the mining region of the Black Hills, yielding gold, lead, silver, and tin. There are smelting and cyanide reduction works, planing mills, machine shops, brewery, a foundry, brick and lime works, and a large sliming plant. Deadwood was settled in 1876. Pop., 1900, 3498; 1910, 3653.

DEAF-MUTE. A person who is deaf and dumb. Those who are born deaf or who lose their hearing at a very early age are also dumb,

because they have not learned to speak by hearing others speak. They should not, therefore, be classed with those who cannot articulate words because of defect in the speech centres of the brain or disease of the organs of articulation. Persons who have learned to speak and then become deaf do not become mute, though the quality of voice used is often harsh and unnatural; and if the deprivation of hearing occurred in childhood, the voice often remains childish. Deafness from birth (congenital deafness) is probably due to arrest of development in the embryo. The condition is found in certain instances as a family trait, in families with neurotic inheritances. Alcoholism and insanity are found in such families; and, besides these, parental syphilis is frequently a causal influence in producing congenital deafness. The intermarriage of near relatives who inherit similar disease tendencies has been a large factor in the production of deaf offspring. Boudin, of Paris, asserts that about 25 per cent of the deaf-mutes of France are the offspring of consanguineous marriages. In England Buxton places the figures at 10 per cent in his experience. Bemiss, of Louisville, Ky., records that over 10 per cent of the deaf and dumb throughout the country at large are the offspring of kindred parents. Howe, of Boston, gave similar testimony. Since the educational opportunities and social status of deaf-mutes have been improved, marriages among them are common. Such unions are only slightly less productive than normal marriages. Of 3078 couples 14.1 per cent were without offspring, and the average number of children among them was 2.61 per cent. The principal causes of acquired deafness are noted under DEAFNESS.

In early historical times statesmen, lawyers, and philosophers agreed that deaf-mutes were incapable of being educated. Legally deaf-mutes were then almost everywhere in the same position as idiots and madmen. The Roman law held them to be incapable of consent and consequently unable to enter into a legal obligation or contract. In France deaf-mutes were considered a disgrace to their parents and were kept in seclusion in convents and asylums. Yet examples of considerable capacity on the part of deaf-mutes were not unknown in ancient times and in the Middle Ages. Pliny mentions a successful deaf-mute painter at Rome. The Venerable Bede, about the close of the seventh century, gives an account of a dumb youth who was taught by an early English bishop, St. John of Beverley, to repeat words and sentences after him. Rodolphus Agricola, of Groningen (1442-85), mentions a deaf-mute who had received instruction and could write.

The credit for the first systematic examination of the problem from a philosophical point of view is due to Jerome Cardan (q.v.), whose conclusion was that "written characters and ideas may be connected together without the intervention of sounds." This authoritative declaration had the effect of arousing widespread interest in the problem, and Pedro Ponce de León (1520-84), a Spanish Benedictine monk, undertook to give regular instruction to the deaf and dumb. Pasch, a clergyman of Brandenburg, was the next teacher of note, and he was followed by Juan Pablo Bonet, secretary to the Constable of Castile; Spain, also a Benedictine monk. Bonet published a work in 1620, which is the earliest-known treatise on the sub-

ject and which probably embodied the ideas of Cardan. It contained a manual alphabet differing much from that described by Bede and in the main identical with the single-hand manual in use to-day. The treatise of Dr. John Bulmer, an English physician, followed in 1648; and this was succeeded by the work of Dr. Wallis, an Oxford professor of mathematics. In 1669 Dr. William Holder, rector of Bletchington, published a similar work, and in 1670 George Sibscote put forth another work. A very able and philosophical treatise was published in 1680 by George Dalgarno, of Aberdeen, Scotland, which received high praise from Leibnitz, together with an earlier work, to which Wallis and Wilkins are both said to be indebted. In the first rank among early teachers of deaf-mutes stands John Conrad Amman, a Swiss physician residing in Amsterdam, who in 1692 reduced the methods then known to an exact art, as described in his *Surdus Loquens*. France, late to recognize the possibilities of deaf-mute instruction, furnished many enthusiastic advocates of it, as Père Vanin, Ernaud, Rodriguez Pereira (a Spaniard who settled in France), and the Abbé Deschamps. Pre-eminent stands the Abbé Charles Michel de l'Épée (1712-89), of Paris, who systematized the instruction of deaf-mutes in France in 1760 in his own school. His successor, Sicard, as well as Itard, followed his methods. It was in 1760, also, that Thomas Braidwood established, at Edinburgh, the first private school for deaf-mutes in the British dominions. This school, in which Wallis's plan of instruction was followed, was the model of the earlier British institutions. In 1783 this school was removed to Hackney, London, and probably led to the establishment of the London Asylum in 1792. Dr. Joseph Watson, a nephew and former assistant of Braidwood, was its first principal.

Institutions. The first public school for deaf-mutes was established at Leipzig in 1778, under the direction of Samuel Heinicke (1720-90). The systematic instruction of the deaf and dumb, and the intelligent organization of institutions in which to educate them, date from the early part of the nineteenth century. An essay on *Teaching the Deaf to Speak*, by Dr. W. Thornton of Philadelphia, was published in 1793, and in 1811 a grandson of Braidwood tried to establish schools in New York and in Virginia, but failed in both instances. The circumstances which led to the opening of the Connecticut asylum at Hartford, April 15, 1817, are as follows: A deaf-mute little girl in the family of Dr. Cogswell, an eminent physician in Hartford, attracting some attention, it was soon afterward found that there were other deaf-mutes in the country. It was decided to send some one abroad to acquire the art of educating them; and to establish a school for this purpose funds were raised, and the Rev. Thomas H. Gallaudet was selected for this work. He left the United States, May 15, 1816, to execute this mission. The institution was incorporated by the Connecticut Legislature in May, 1816, with an appropriation of \$5000. Dr. Gallaudet returned to America in August of the same year, accompanied by Laurent Clerc, a deaf-mute pupil of the Abbé Sicard, and they immediately began collecting funds to start the school. The enterprise excited general interest; individuals and churches contributed liberally, and the sum of \$12,000

was raised in the course of a few months. Early in 1819 Massachusetts followed the example of Connecticut by providing for the education in the asylum of 20 indigent pupils from that State. The appropriation was afterward enlarged so as to meet the demands of this entire class. New Hampshire made a similar provision in 1821, and Vermont and Maine in 1825. In 1834 South Carolina and Georgia decided to send their indigent deaf-mutes to the asylum, and in 1848 Rhode Island came into the same arrangement. In 1819 Congress made a grant to the institution of 23 acres of wild land, the proceeds of which now form a fund of \$339,000. It was owing to this munificent gift that the name of the school was changed to the "American Asylum." Before the school at Hartford was in operation, efforts had been made to establish a similar institution in the city of New York; a society was formed which was incorporated April 15, 1817, as the "New York Institution for Instruction of the Deaf and Dumb." Watson's book was taken as a guide, and articulation was taught in cases where the scholar appeared to possess the necessary aptitude. But this method did not prove very successful; and in 1827 the Legislature, which had provided since 1822 for the support of 32 pupils, authorized an investigation by the superintendent of common schools of the State, who recommended in his report the introduction into the New York school of the improved methods in use at Hartford and Philadelphia. In consequence of that recommendation, the directors finally succeeded in enacting, in 1831, the permanent services of Harvey P. Peet, then one of the most efficient instructors in the American Asylum. He served as principal from 1831 to 1867 and had a worthy successor in his son, Isaac Lewis Peet. Under the management of these two able teachers the institution has taken a place among the most successful schools for deaf-mutes in the world. Its grounds comprise about 26 acres, upon the banks of the Hudson River at Washington Heights, New York City. The institution has a shoe shop, tailor shop, and carpenter shop, a printing office, garden, and sewing rooms connected with the school, in which the pupils receive competent instruction to prepare them for self-support by manual labor, as in all our large asylums. The Pennsylvania institution was organized at Philadelphia in 1820 by Joseph Seixas, a Portuguese Jew. Laurent Clerc was an instructor in it, as was Lewis Weld, its first principal. The Kentucky Asylum for Deaf-Mutes was incorporated at Danville in 1823. The Ohio institution was opened in Columbus in 1820. Virginia, Indiana, Tennessee, Illinois, North Carolina, Georgia, South Carolina, Missouri, Wisconsin, and Michigan followed the example during the succeeding quarter century, and now every State in the Union has an institution in which deaf-mutes receive the privileges of education "as wards of the commonwealth." In most cases the State institutions are supported by annual legislative appropriations. This public provision includes expenses of transportation to and from the institution and all expenses while there. Most of the State institutions have school years corresponding to those of the public schools, and it is expected that friends or relatives will keep the children during the long summer vacation. The average term of attendance is about five years, but the

legal period of instruction in most States is seven years. The average cost to the State is about \$325 per year. According to the report of the Commissioner of Education for the year ending June 30, 1912, there were in the United States, in 1911-12, 141 schools (both public and private), with 13,690 pupils. The following table gives details regarding these:

	State institutions	Public day schools for the deaf	Private schools
Number of schools....	64	58	19
Male teachers	410	10	15
Female teachers	930	229	69
Total.....	1,340	239	84
Male pupils	6,057	949	217
Female pupils	5,187	979	301
Total.....	11,244	1,928	518
Graduates, 1912	130	2	1
Taught by oral method	6,596	1,798	373
Auricular method	340	33	18

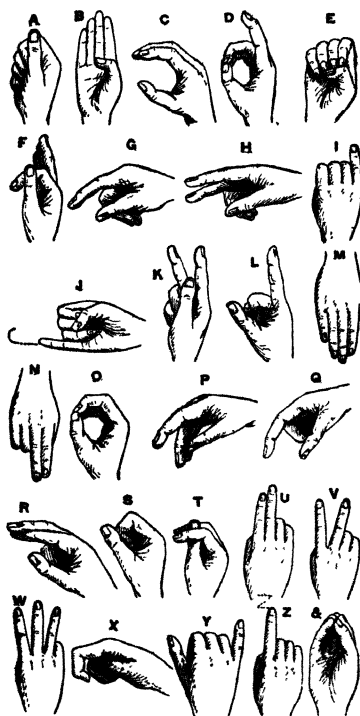
Public day schools for the deaf now exist in California (4), Illinois (3), Louisiana (1), Massachusetts (1), Michigan (14), Missouri (1), New Jersey (2), New York (2), Ohio (6), Oregon (1), Washington (2), and Wisconsin (21).

Besides those already mentioned, the names of the following Americans should be recorded as especially associated with the education of deaf-mutes: Dr. F. A. P. Barnard, for many years president of Columbia College, New York City; William W. Turner, of Hartford; Abraham R. Walton, of Philadelphia; John A. Jacobs, of Kentucky; Dr. Samuel G. Howe, of Boston; and Thomas and Edward M. Gallaudet, sons of the Rev. Thomas H. Gallaudet.

Some very remarkable examples of acute perception and great proficiency in deaf-mutes have been recorded, notably the cases of Julia Brace, a pupil of Dr. Thomas H. Gallaudet, of Hartford; Laura Bridgman (q.v.), the celebrated blind deaf-mute, a pupil of Dr. Howe, of Boston; and Helen Keller (q.v.), of Boston, a lady of wide information and great intelligence.

Methods of Instruction. Two methods of instruction are used in teaching the deaf and dumb—by the *sign language* and by *articulation*. By means of the sign language ideas are communicated to the pupil through posture, gesture, facial expression, and mimic acting by the teacher. Nothing is spelled with the hands in this method, as is erroneously supposed. Putting the hand to the head, as if putting on a cap, is the sign for "man," for example. This is an arbitrary sign. An example of a natural sign is raising the hand to the mouth and then chewing, to express "food." The sign language is easily and speedily acquired and is said to be understood and used by the American Indians. The use of an elaborate sign language was carried to such extremes by the Abbé de l'Épée

and his followers, Abbé Sicard and Abbé Stœck, that their pupils relied entirely upon their memory, without any corresponding ideation. They proved to be incapable of composing sentences voluntarily, but simply memorized the gesture of the master. In some schools, after the pupil has become proficient in the sign manual, the use of the alphabet is introduced. The one-handed and two-handed alphabets are shown in the figures. Almost all pupils find the acquisition of *articulation*, or lip reading, easier than that of the manual alphabet. In teaching by articulation the pupil watches the lips and tongue of the teacher and, by imitation of the motions seen, is able to speak. Consonants are taught first, and then the vowels. During the pronunciation of some sounds the pupil grasps the teacher's throat and imitates the vibration and position of the muscles. This method is very slow, and pupils gain more general knowledge and with greater ease by the use of the *sign language*. In the celebrated Clarke school at Northampton, Mass., the old method of articulation was employed for a considerable time,



ONE-HANDED ALPHABET.

but has been displaced by the Bell system. The method of teaching articulation by *visible speech* was invented by A. Melville Bell, professor of vocal physiology in Edinburgh, who introduced it in 1848. It was perfected and first used in the schools of Great Britain in 1869. In 1872 it was introduced into the Northampton school

by A. Graham Bell, the son of the inventor of the method. The Bell system consists of a series of phonetic characters based on the position of the vocal organs when in action. The charac-



TWO-HANDED ALPHABET

ters suggest to the eye the mechanism of speech in the formation of every possible sound that can be uttered. The following explanation of the system and of the characters is taken from Bell's *English Visible Speech in Twelve Lessons* (Washington, D. C., 1895). Dr Bell adds that



- | | | | |
|---|----------------|---|--------------------|
| C | Back of tongue | S | Nasal passage open |
| C | Top of tongue | X | Glottis, closed |

- | | | | |
|---|---------------------------|---|---------------------|
| U | Point of tongue | \| | Glottis, vocalizing |
| U | Lips | O | " open (aspirate) |
| O | Throat aspirate (whisper) | | |

A curved line means a consonant.

A straight line means a vowel.

A line within a curve means a vocal consonant.

CONSONANTS

The direction of the curve denotes:

To left (C) formation by back of tongue.

To right (C) formation by lips.

Convex above (C) formation by top of tongue.

Concave above (C) formation by point of tongue.

The varieties of curves denote:

Primary (C) central emission of breath.

Divided (3) side emission of breath.

Mixed (C) central emission of breath. } with modification by two parts of the mouth.

Mixed divided (M) side emission of breath.

Shut (C) oral stoppage of breath with emission through the nose.

Nasal (C) oral stoppage of breath.

VOWELS

A point or a hook on a straight line denotes the vowel positions of the tongue. Thus:

On left side of line (l) back of mouth.

On right side of line (r) front of mouth.

On both sides of line (T) mixed back and front.

At top of line (T) high.

At bottom of line (l) low.

At both ends of line (l) mid elevation.

A cross bar on a line denotes rounding or contraction of the lips. Thus: f t j

The symbols have the same value in all languages. Consequently, when the meaning of the symbols is known, the sound of any language may be deduced with certainty from their visible speech writing.

these explanations are for teachers only, for learners do not require to know the theory of the system.

Statistics. The number of deaf-mutes bears a certain relation to the population, being far greater in countries wherein squalor, privation,

or medical ignorance and unhygienic conditions prevail. The ratio of deaf-mutes to population is as follows, for the different countries named: Sardinia, 1 to 760; Nova Scotia, 1 to 880; Ireland and Norway, 1 to 970; France, 1 to 1200; Prussia, 1 to 1675; England, 1 to 1970; Holland, 1 to 2000; United States, 1 to 2400.

Bibliography. A. Graham Bell, *Deaf Mute Instruction in Relation to the Work of the Public Schools* (Washington, D. C., 1884); Garrett, *Directions to Parents of Deaf Children* (ib., 1886); E. M. Gallaudet, *The Combined System of Educating the Deaf* (ib., 1891). The Volta Bureau, Washington, D. C., issues many publications upon the subject, among which may be noted: Fay, *Marriages of the Deaf in America* (1898); Arnold, *Manual for Teaching the Deaf; Histories of American Schools for the Deaf*. Consult also Horne, *Hereditary Deaf-Mutism* (London, 1909), and Winnie, *History and Handbook of Day Schools for the Deaf and Blind* (New York, 1912).

DEAFNESS, dēf'nēs (AS. *deaf*, OHG. *toup*, Ger. *taub*, Goth. *daubs*, deaf; probably originally dull of sense; cf. MHG. *tump*, stupid, OHG. *tumb*, deaf, dumb, Gk. *τυφλός*, *typhlos*, blind). Complete or partial imperfection of hearing that may affect both ears or one, may and may not date from birth, and may be either permanent or temporary. Among the numerous possible causes of deafness the following deserve mention here: (1) wax in the ear touching the drum membrane; (2) swelling of the lining membrane of the Eustachian tubes, the canals that lead from the upper part of the throat to the middle ear, one on each side, (3) perforation of the drum membrane; (4) middle-ear disease, during which exudation accompanying inflammation collects behind the drum membrane or about the ossicles (the small bones of the ear), or during which adhesions form between the ossicles, stiffening their joints so that they cannot move freely against each other; (5) internal-ear disease, either labyrinthine trouble or affection of the eighth nerve; (6) diseases of the brain involving some of the auditory centres; (7) mumps, measles, scarlet fever, and some other diseases, are accompanied by middle-ear disease; (8) quinine and the salicylates cause temporary deafness; (9) sudden concussion sometimes ruptures the drum of the ear, and constant noise, like that in a boiler shop, injures the auditory nerve from overexcitation.

The treatment of deafness depends, naturally, upon its cause. Wax should be removed by syringing or the cautious use of the curette. Closure of the Eustachian tubes is treated by catheterization and local applications. In cases of perforation the drum may grow again, after the cure of middle-ear disease, or may be remedied by the application of a disk of thin gutta-percha tissue. Middle-ear diseases may be cured by treatment through the Eustachian tubes, or purulent cases may require the operation of opening the accessory cavities of the ear situated in the mastoid process of the temporal bone through the skull back of the auricle. The ossicles may be removed in part, leaving the foot plate of the stirrup bone in position, closing the oval window in the labyrinth, and clearing out the remains of the drum membrane; in which case the waves of sound strike the stirrup plate in place of the drum membrane and are conducted to the nerve filaments. Internal-ear disease may be relieved by internal medication, but is gener-

ally permanent. See EAR; DEAF-MUTE; NERVEOUS SYSTEM.

DEÁK, dē'ák, FERENCZ (FRANCIS) (1803-76). An Hungarian statesman, born at Sőjtör, in the County of Zala. He studied law at Raab, practiced as an advocate in his native county, and soon became noted for his eloquence and enlightened patriotism. Elected in 1832 to the National Diet, Deák, as leader of the Liberal opposition, resisted every attempt of the Imperial government to infringe on the constitutional rights of Hungary. At the same time he labored for its internal improvement, promoting measures for the elevation of the peasantry, and advocated the abolition of exemption from taxes enjoyed by the nobility, of which he was himself a member. His views on the last point displeased a portion of his constituents, and he declined to serve in the Diet of 1843-44, but he continued to direct the policy of the Moderate Liberal party. After the revolution of March, 1848, he became Minister of Justice in the cabinet of Count Batthyányi (q.v.) and formed the project of effecting a general reform in the administration of justice in Hungary, which, however, the revolutionary war rendered impossible. Deák used every effort to ward off the struggle and to arrive at an arrangement with Austria. When the rupture seemed inevitable and the Committee of Defense was formed, with Kossuth at its head, Deák resigned his portfolio. At the close of 1848 he was sent to the camp of the Austrian commander, Windischgrätz, to negotiate for peace, but the attempt failed. Deák was arrested, but was soon released and took up his abode at Pest. Though repeatedly invited to act as mediator between the dynasty and the Hungarian nation, Deák did not return to public life until 1860, when Francis Joseph promised to restore to Hungary its constitutional liberties. Returned by the city of Pest to the Diet in 1861, he became the acknowledged leader in that assembly. In May the Diet appointed him to draw up the address to the Emperor. This address demanded the restoration of the constitution of 1848 and an independent Hungarian ministry. The Emperor thereupon announced the dissolution of the Hungarian Diet. A new effort to reach an agreement was made in 1865, and, after the disastrous issue of the war between Austria and Prussia in 1866, the Emperor found himself compelled to accede to all the demands of Hungary, as formulated by Deák. The Austrian monarchy was reorganized on its present dualistic basis, and Francis Joseph was crowned with great pomp as constitutional King of Hungary in 1867. Deák remained until his death (Jan. 29, 1876) the leader of his party in the Diet. Deák is universally admitted to have been one of the ablest of European statesmen. He was a man of the loftiest character, kindly and simple in his ways. As an orator, he was irresistible by the sheer force of his logic. Consult: Forster, *Francis Deák, Hungarian Statesman* (London, 1880); Laveleye, "Ferencz Deák," in *La Prusse et l'Autriche* (Paris, 1870); Csengery, *Franz Deák*, authorized German translation by Heinrich (Leipzig, 1877-78).

DEÁKIN, ALFRED (1856-). An Australian statesman, born in Melbourne. He studied at the university of his native town and was elected to the Victorian Parliament in 1879. In 1883 he was Colonial Minister of Public Works and in 1885 became Solicitor-General. Two years later he represented Victoria in the Imperial

Conference at London and subsequently took active part in the movement for Australian federation. He was Attorney-General in the first Commonwealth ministry (1901-03), and in the latter year succeeded Sir Edmund Barton as Premier and leader of the Protectionist party. His ministry was overthrown in April, 1904, but he formed a new government in July, 1905, serving as Prime Minister in 1905-08 and in 1909-10. He represented Australia at the Imperial Conference (1907), and was leader of the Federal opposition from 1910 to 1913, when he retired from political life. His publications include *Irrigation in Australia* (1893) and *Temple and Tomb* (1894).

DEAL (formerly *Dole*, from Icel. *dalr*, Norw. *dæl*, Eng. *dale*). A municipal borough, market town, and sea-bathing place, in Kent, England, on the North Sea, between North and South Foreland, 8 miles north-northeast of Dover (Map: England, H 5). The fine anchorage of the Downs, about 8 miles long by 6 miles wide, formed by the Goodwin Sands, lies off Deal. The town is composed of Lower Deal, on the coast. Middle Deal, and Upper Deal, the original settlement, once on the coast, but now about a mile inland. The chief branches of industry are connected with maritime pursuits, boat building, sail making, "hoveling"—i.e., piloting, the term being perhaps derived from the use of hovels on the shore—victualing, and naval stores. Deal hovelers have long been famous for their skill and fearlessness as seamen and life-savers. Pop., 1901, 10,581; 1911, 11,297. Deal has been one of the Cinque Ports since the thirteenth century. The coast near Deal was formerly defended by four castles: Deal, built by Henry VIII in 1539. Sandown, about a mile to the east, where Colonel Hutchinson, the Puritan soldier, was imprisoned and probably died; Sandgate, and Walmer. Sandown Castle was removed on account of the inroads of the sea. Walmer Castle, in which the Duke of Wellington died in 1852, is now the official residence of the Lord Warden of the Cinque Ports (q.v.). Julius Cæsar, with two legions in 82 ships, is believed by some to have landed at Deal in 55 B.C.

DEAL (Dan. *deæl*, Ger. *Diele*, board, plank, AS. *thel*, plank, *thulle*, board). The trade name in England for fir boards exceeding 6 feet in length and 7 inches in width. Pieces of smaller section are called battens. Deals are usually 3 inches thick, and when sawed into thinner pieces they are called boards. When a deal is sawed into 12 or more thin planks, they are called leaves. These terms are not used in the United States (except *batten* for a long, narrow, flat strip).

DEALEY, JAMES QUAYLE (1861-). An American university professor and writer on social science. He was born at Manchester, England, but early came to the United States, graduated from Brown University in 1890, and spent five years in advanced work. For several years he taught in Texas and Vermont, but he returned to Brown to be an instructor in Latin from 1893 to 1895, and after that professor of social and political science. His publications include: *Textbook of Sociology* (1905), with Lester F. Ward; *Our State Constitutions* (1907); *The Development of the State* (1909); *Sociology* (1909); *Ethical and Religious Significance of the State* (1910); *The Family in its Sociological Aspects* (1912).

DEALFISH (*deal*, a board, plank; refers to

the shape of the fish). A ribbon fish (q.v.), especially of the genus *Trachipterus*.

DEAMBULATORY (Lat. *deambulatorium*, a gallery for walking, from *deambulare*, to walk abroad, to promenade). The same as **AMBULATORY** (q.v.).

DE AMICIS, dā a-mĕ'chäs, EDMONDO. See **AMICIS**, EDMONDO DE.

DE AMICITIA, dē am'ĭ-shĭ'a, or **DE LIUS**. A treatise by Cicero on friendship, written in 44 B.C., and dedicated to Titus Pomponius Atticus. The time is supposed to be 129 B.C.

DEAN (ME. *decm*, OF. *deicn*, Fr. *doyen*, from Lat. *decanus*, one set over ten persons, from Lat. *decem*, Gk. *deka*, *deka*, Skt. *dasa*, ten). The title of certain dignitaries, particularly ecclesiastical and academic. In the ecclesiastical sense the title was originally adapted from the Roman civil administration, in which were officers called deans, mentioned in the codes of Theodosius and Justinian. It was at one time customary in the monasteries to appoint a *decanus* over every 10 monks, to take charge of their discipline. On the introduction of the canonical life (see **CANON**) among the clergy attached to cathedrals, this title was applied in many places to the head of the chapter (q.v.); but as early as the time of St. Jerome it was customary to have a similar officer attached to the bishop's immediate staff under the title of *archipresbyter*. In modern German cathedrals the dean is frequently subordinate to the provost, and has executive and partly secular functions. He is appointed usually by the bishop, but sometimes by the sovereign or the chapter. The deans of English cathedrals are appointed by the crown and required to reside for eight months in the year. The income of the office varies from £3000 in the case of Christ Church, Oxford, down to £500 at Chichester.

In this sense the title is used in a few dioceses of the American Episcopal church, though the functions connected with it are generally rather vaguely defined. There are also in England *deans of peculiars*, the incumbents of certain churches formerly, though not now, collegiate, as of Battle, in Sussex, founded by William the Conqueror, in memory of his conquest; of Bocking, in Essex and of Croydon, in Surrey. The deans of Westminster and Windsor are also deans of peculiars, the Abbey and St. George's Chapel being exempt from the jurisdiction of the bishops in whose diocese they are situated. There have been also from very ancient times, both in England and on the Continent, *rural deans*, whose duty it is to visit a certain number of parishes and report on their condition to the bishop: the more important and formal part of their functions has, however, been transferred to the archdeacon. Similar officers in America are known as deans of convocations.

In the universities of Oxford and Cambridge the dean is the officer in each college who superintends its discipline, except in the case of Christ Church, Oxford, which is both cathedral and college, and where the dean is head of the college. The title is still sometimes used in America in its earlier sense as designating the presiding or senior officer of an academic faculty. In German universities each faculty elects a dean annually, who presides over its meetings, represents it in external relations, and supervises both teachers and students.

In a special sense the word is applied to the oldest member in length of service of a body of

persons of equal rank, such as a diplomatic corps, or to the president of an incorporated body of lawyers. It is in the latter sense that the chief judicial officer of the Archbishop of Canterbury is called the Dean of the Court of Arches. The dean of the Sacred College is the senior Cardinal Bishop, who always occupies the see of Ostia. He presides at the meetings of the Sacred College in the absence of the Pope. He has the privilege of wearing the *pallium* in all ceremonies pertaining to his office, of consecrating the newly elected Pope in case he should not be already a bishop, and in any case of presiding at the coronation ceremonies. See CARDINAL.

DEAN (AS. *denn*, valley), FOREST OF. A hilly tract, 22,000 acres in extent, in the west of Gloucestershire, England, between the Severn and the Wye. It is partly crownland. It was formerly a vast source of timber supply for the British navy, and half of it still remains inclosed for that purpose. It contains oak, beech, and other woods, orchards, stone quarries, and coal and iron mines. The iron shafts have been worked since Roman times. A populous mining district, it gives its name to a parliamentary division which includes nearly all of Gloucestershire west of the Severn.

DEAN, AMOS (1803-68). An American lawyer and law writer. He was born in Barnard, Vt., and graduated at Union College in 1822. He soon gained recognition as a lawyer of ability and learning, and his treatises on legal subjects were recognized as authoritative. In 1839 he became professor of medical jurisprudence in the Albany Medical School and in 1851 professor of law in the newly founded law school at Albany. He also served as chancellor and professor of history at the University of Iowa in 1855. His works include: *Lectures on Phrenology* (1835); *Manual of Law* (1838); *Philosophy of Human Life* (1839); *Medical Jurisprudence* (1854); *Bryant and Stratton's Commercial Law* (1861); an unfinished *History of Civilization* (7 vols., 1860-70); *The British Constitution* (1883).

DEAN, BASHFORD (1867-). An American zoölogist, born in New York City and educated at the College of the City of New York, where he graduated in 1886, at Columbia University, and in Munich and Naples. He taught at Columbia after 1891, becoming professor of vertebrate zoölogy in 1904. He also served (1900-01) as biologist of the United States Fish Commission, for which he made special investigations in Europe and Japan. In 1902 he became a member of the advisory board of the New York Aquarium, in 1903 curator of herpetology and ichthyology in the American Museum of Natural History, and in the same year curator of arms and armor in the Metropolitan Museum of Art. Besides papers on paleichthyology and the embryology of fishes, and reports to the United States Fish Commission, he is author of the textbook *Fishes, Living and Fossil* (1895).

DEANE, CHARLES (1813-89). An American author. He was born in Biddeford, Me., was educated at Saco, and in 1832 went to Boston, where he was a merchant for 22 years. He early acquired a taste for American history and at the time of his death had accumulated a valuable collection of rare Americana. Among his publications are: *Some Notices of Samuel Gorton* (1850); *Memoir of George Livermore* (1869); *The Forms in Issuing Letters Patent by the Crown of England* (1870). He also edited Bradford's *History of Plymouth Plantation* (1856);

Wingfield's *Discourse of Virginia* (1860), in which was first seriously questioned the authenticity of the famous Pocahontas rescue story; and John Smith's *True Relation* (1866).

DEANE, JAMES (1801-58). An American physician and naturalist, born in Coleraine, Mass. He was the discoverer, in 1835, of the fossil footprints in the red sandstone of the Connecticut valley, later more fully investigated by Professor (afterward President) Edward Hitchcock of Amherst College. On this subject he wrote *Ichnographs from the Sandstone of Connecticut River* (1861). He also published many articles on medical subjects.

DEANE, SILAS (1737-89). An American diplomatist during the Revolutionary War, who passed the latter part of his life in England. He was born in Groton, Conn., graduated at Yale in 1758, was admitted to the bar in 1761, became an active member of the "patriot" party on the approach of the Revolutionary War, and was a delegate from Connecticut to the first and second Continental Congresses. In February, 1776, largely through the influence of Robert Morris, he was appointed by Congress business agent of the United States at Paris, where he entered upon his duties in July of the same year. Until Franklin's arrival he acted virtually as the official delegate of the United States to the French court and, besides securing and transmitting supplies, induced many French officers—sometimes by lavish and ill-advised promises—to take service in the American army. In December he, with Benjamin Franklin and Arthur Lee, went as commissioner from Congress to France. Soon afterward he was charged indirectly by Arthur Lee (q.v.) with having misappropriated part of the public funds, and towards the close of 1777 Congress sent a summons to him to return, ostensibly to communicate information concerning the attitude of European Powers towards the United States. Before this order reached him, he signed, together with the other commissioners, the treaties of commerce and alliance with France early in 1778. Immediately upon his return he was asked to surrender a detailed account of his financial transactions, but failed to satisfy Congress, which persistently refused to authorize a settlement of his accounts. In America he was defended by John Jay and John Adams. "No proof appears that he had been dishonest," says the historian Hildreth, "or had employed the public money in speculations of his own, as his enemies alleged; but he had occupied the unfortunate position of having large sums of public money pass through his hands before any proper system of vouchers and accountability had been established, and he fell before the same spirit of malignant accusation which presently assailed Wadsworth, Greene, Morris, and even Franklin himself, but which they had better means of warding off" (*History of the United States*, iii, 269). Deane soon returned to France, largely for the purpose of straightening out his accounts, was forced to retire to Holland for a while, and subsequently became convinced that the Revolution was destined to fail and that the United States should again become Colonies of England. Late in 1781 *Rivington's Royal Gazette* (New York) published a series of "intercepted" letters written by him (at the instigation, it has been charged, of George III and Lord North) to prominent Americans, in which he strongly opposed the Declaration of Independence and the French alliance

and urged prompt submission to Great Britain. For this he was considered a traitor by a large element of the patriot party. In 1842 Congress at last adjusted Deane's accounts and paid to his heirs about \$37,000. Dean published, in defense of his conduct, *An Address to the Free and Independent Citizens of the United States* (Hartford and London, 1784). A part of his correspondence in 1774-76 is given in the *Papers of the Connecticut Historical Society*, vol. ii (Hartford, 1891), and much of his diplomatic correspondence, together with a biographical sketch, may be found in Wharton (ed.), *The Revolutionary Diplomatic Correspondence of the United States* (6 vols., Washington, 1889). Consult also *The Deane Papers* (5 vols., New York, 1886-90), published by the New York Historical Society, and *Papers in Relation to the Case of Silas Deane* (Philadelphia, 1855), published by the Seventy-six Society.

DEAN OF GUILD. Formerly the head of trade guilds in Scottish towns, now a corporation official.

DEAN OF THE CHAPEL ROYAL. An office held by six (formerly three) clergymen of the Established church of Scotland, to which they are appointed by the crown. The benefice of the chapel royal, which was instituted by James V, was richly endowed. The duties of the office used to be merely nominal; but in 1846, on the foundation of a chair of biblical criticism in the University of Edinburgh, it was endowed with one-third of the revenues, the professor becoming one of the three deans. In 1858 the Universities Commission recommended that, when the requisite vacancies occurred, the revenues should be divided into six parts, attached respectively to the chairs of divinity and biblical criticism in Edinburgh University (the latter receiving two-sixths of the whole), biblical criticism in Aberdeen University, biblical criticism in Glasgow University, and church history in St. Andrews University. As a result of this arrangement, the revenues of the chapel royal are divided among the incumbents of the above-mentioned chairs. Besides these five deans, the dean of the Order of the Thistle bears the title of Dean of the Chapel Royal, but draws none of the revenues.

DEANS, DAVID, EFFIE, and JEANIE. The family about which centred the plot in Sir Walter Scott's novel *The Heart of Midlothian*.

DEARBORN, FORT. See FORT DEARBORN.

DEARBORN, HENRY (1751-1829). An American soldier, born in North Hampton, N. H. He studied medicine and became a physician, but left his practice upon receiving the news of Lexington, entered the army as captain in 1775, served throughout the Revolution, and distinguished himself at Quebec (where he was taken prisoner), Saratoga, Monmouth, and Yorktown. After the war he settled in Maine, and was a Democrat Representative in Congress in 1793-97. He was Secretary of War under Jefferson from 1801 to 1809 and at the outbreak of the War of 1812 was appointed senior major general of the army and was assigned to the Northern Department. He captured Toronto (then York) and Fort George, but in July, 1813, was recalled, being charged with political intrigue, and was placed in command at New York. He resigned from the army in 1815. From 1822 to 1824 he was Minister to Portugal. His last years were spent in Roxbury, Mass.

DEARING, JOHN LINCOLN (1858-).

An American missionary, born at Webster, Me. After graduating from Colby College in 1884 and from the Newton Theological Institution in 1889 he was ordained to the Baptist ministry and was sent by the American Baptist Missionary Union to Japan. He was president and professor of theology and ethics in the Yokohama Baptist Theological Seminary from 1894 until 1908, when he was appointed general missionary superintendent of the American Baptist Missionary Union for Japan, China, and the Philippines. He also lectured in the United States and in 1909-10 was engaged in the Laymen's Missionary movement. Besides contributions to religious periodicals, he is author of *Outline of Theology* (1895) in Japanese.

DEARTH, HENRY GOLDEN (1863-). An American landscape painter. He was born at Bristol, R. I., and studied at the Ecole des Beaux-Arts under Aimé Morot in Paris, and made New York his residence. He was elected to the National Academy of Design in 1906 and received medals at Paris in 1900, at Buffalo in 1901, and at Berlin in 1910. There is much charm in his carefully painted evening scenes; the color is rich, and he has the quality of atmosphere that gives every subject touched by him individuality. The scenery of Long Island and Connecticut is the theme of many of Dearth's paintings. Among the most important are: "Boulogne Harbor" (Metropolitan Museum); "An Old Church at Montreuil" (National Gallery, Washington); "In the Gloaming" (Detroit Museum); "Road and Canal" and "Gardenias" (Buffalo Academy); "Dreamland" and "Golden Sunset" (both in the Brooklyn Museum).

DEATH. The ultimate cause of death is stoppage of the heart and consequent arrest of the circulation. The tissues then die from lack of nourishment. Somatic death, or death of the body as a whole, occurs when the heart stops beating, but this can not be said of the various tissues: molecular death is a gradual process. Indeed Carrell has succeeded in keeping a state of suspended animation in tissues and organs of animals for months and then restored them to life by supplying the circulation. Muscles in dying undergo a remarkable change, namely *rigor mortis*. The phenomenon of *rigor mortis* or cadaveric rigidity is marked by several features. The muscle loses the translucency and elasticity possessed by living muscle and becomes firmer and more resistant to pressure. Chemically there is a large increase in carbonic acid, and the reaction of the muscle becomes acid, instead of alkaline, as in life.

It is not always easy to determine the precise moment when life becomes extinct. The phenomena of syncope, asphyxia, and particularly of the trance state, closely resemble those of death. Many signs and tests of death have been proposed. A common but fallible method is to hold a cold polished mirror before the mouth to determine if respiration has ceased. If it has not, the mirror will become cloudy. A cup of water placed on the chest will enable the observer to detect the slightest respiratory movement.

Richardson summarizes the more important tests of death as (1) absence of the pulsation of the heart, (2) absence of the respiratory murmur, (3) pressure on veins (fillet test), (4) electric test for muscular irritability, (5) the ammonia hypodermic test (Monteverde's sign), (6) coagulation of the blood in the veins, (7)

rigor mortis, (8) decomposition. The fillet test consists in applying constriction to the veins in the arm, which if life is present will cause the vein on the distal side to fill. After death no effect is produced. Monteverde's sign is evoked by the injection subcutaneously of a little ammonia solution. In life this will be followed by a port-wine congestion in the surrounding parts, whereas in death no effect is produced.

The more common causes of sudden death, excluding accidents, are cerebral hemorrhage; rupture of a gastric ulcer; valvular disease of the heart; angina pectoris; rupture of an aortic aneurysm; sunstroke; shocks of electricity; mental or physical shocks; diabetic coma; and uremia. See BURIAL; CREMATION; MORTUARY CUSTOMS.

In law, any event which extinguishes the civil rights of a person. This was the ordinary and natural consequence of *natural* death, but at common law it resulted equally from *civil* death. As Blackstone states it, "the civil death commenced if a man was banished or abjured the realm by the process of the common law, or entered into religion; that is, went into a monastery and became there a monk professed; in which cases he was absolutely dead in law, and his next heir should have the estate." A person incurring civil death might, "like other dying men," make his last will and testament and appoint executors to administer his estate. Civil death has been abolished in England and has never in the strict sense of the term been recognized in the United States.

The normal effect of death in law is, as intimated above, to extinguish the civil rights of the deceased. It was, indeed, the right and duty of his personal representative to enforce certain obligations due the deceased, as debts and sums of money due on contract, but tort actions and other actions of a personal nature died with him. Thus while a person injured as the result of another's negligence was entitled to maintain an action therefor, the action abated in the event of the death of the plaintiff; while, if a person died as the result of such an accident, no legal remedy existed. This injustice was remedied by the Act of Parliament, known as Lord Campbell's Act, in 1842 (9 and 10 Vict., c. 93), which gave an action for unlawfully causing the death of a person, to be maintained by the personal representative of the deceased for the benefit of his family. Similar statutes have been enacted in all the United States. See ABATEMENT; CIVIL DEATH; TORT, and the authorities cited under the last-mentioned title.

DEATH, BRETHREN OF. The name given to the hermits of the Order of St. Paul, an order formed in the thirteenth century, but suppressed by Pope Urban VIII about 1630. They dressed in a black habit marked with a skull and saluted each other with the words "Remember that you must die."

DEATH, DANCE OF. A literary or pictorial representation of the power of death over the life of men. The subject was at first presented as a church play, preceded by an exhortation and ending with an appropriate sermon. (See MIRACLE PLAY; MYSTERY; MORALITY.) Probably because of the importance of the Maccabee brothers and their mother in the earlier representations, the French and other Latin peoples call it the *Danse Macabre*, or some equivalent name. The play consisted of a dialogue between death and

representatives of the various classes, churchmen and laymen, from the Pope and the Emperor down. Death invited them to follow him, and each unfortunate representative, after long remonstrances, submitted to the call, invoking God's mercy. At first Death was represented in an earnest and solemn manner, but soon his attitude took the character of a dance. Such plays were given in all countries where the Latin church prevailed, and in Italy we find another version of the same subject, rendered popular by Dante and Petrarch, the "Triumph of Death."

It was soon found more efficacious, however, to have the subject portrayed by painters and sculptors upon the walls of the church or the cemetery. The most famous example of the "Triumph of Death" is the fresco of the Campo Santo of Pisa (fourteenth century), wrongfully ascribed to Andrea Orcagna. Among the oldest French examples of the "Dance of Death" was that in the cemetery of the Innocents, Paris (1425). Others still exist in France, as well as in England, Germany, and Spain. The subject is often pictorially represented in the manuscripts of the fifteenth and sixteenth centuries and in many woodcuts of the fifteenth and following centuries. The most famous of the latter are the two designed by Holbein—the smaller engraved by Lutzelburger (1520), while the larger appeared in book form in 1538 (at Lyons) and many times since. Episodes of the subject were also represented in painting, particularly by Hans Baldung Grien (Basel Museum). In the nineteenth century the most famous representation was that of Rethel (1848), directed against the French Republic. It has also been admirably treated in music, especially by Saint-Saëns in his *Danse macabre*, and in literature, as, e.g., in Goethe's ballad *Der Totentanz*.

Consult: Douce, *The Dance of Death* (London, 1833); Langlois, *Essai sur les danses des morts* (Rouen, 1851); Kastner, *Les danses des morts* (Paris, 1852); Wackernagel, "Der Totentanz," in *Kleinere Schriften*, 1 (Leipzig, 1874); Vigo, *Le danse macabre in Italia* (Livorno, 1878); Merino, *La danza macabre* (Madrid, 1884); Seemann, *Die Totentanz des Mittelalters* (Norden, 1893); Kurth, *Reigen der Totentanz 15. bis 19. Jahrhundert* (Berlin, 1900); Wessely, *Die Gestalten des Todes in der darstellenden Kunst* (Leipzig, 1876); Goelte, *Holbeins Totentanz und seine Vorbilder* (Strassburg, 1897).

DEATH ADDER. Any of several deadly Elapidae, Australasian viviparous snakes, especially the spine-tailed *Acanthophis antarcticus*, which is widely distributed from South Australia to the Moluccas and resembles in form and color an American rattlesnake. The end of the tail "is laterally compressed, beset with a few rows of large imbricating scales, and terminates in a thin, horny spine." Dr. Gadow thinks the use of this peculiar tail "very probably consists in attracting or fixing the attention of small animals; the snake, lying coiled up on a dry and sandy spot, slightly raising and vibrating the tip of the tail." It feeds mainly on frogs and young birds. Another species greatly feared is the larger and more cylindrical purplish adder (*Pseudechis porphyriaceus*), or "black snake," which may reach 7 feet in length, and is purplish black, varying in different specimens to dark olive brown, with carmine sides and red belly, specked with black. A third species, especially dangerous, although smaller, because of its resemblance to the harmless serpents, is

the short death adder (*Holocephalus curius*), also known as the broad-headed, tiger, or brown-banded snake. It is very variable, but the head, which has a peculiarly square outline, is "generally uniform black, the body olive color, with broad brown or black crossbands, the hinder part of the body . . . blackish, and the whole of the under parts light yellow." Its venom is immediately fatal to animals generally, but seems not to be so to itself or other poisonous snakes. Thirty or more young are brought forth annually by a single pair, and the species is common everywhere on the continent. It buries itself in the ground during the cold season. The genus *Holocephalus* has several other species in Australasia and the south seas. One of these, the large-scaled (*Holocephalus superbus*), is the dreaded diamond snake of Tasmania; another is the smaller, broad-headed snake (*Holocephalus variegatus*) of the neighborhood of Sydney; a third (*Holocephalus nigrescens*), of the south-eastern coast of Australia, is remarkable for its white tongue. Consult KREFT, *Snakes of Australia* (Sydney, 1869).

DEATHBED, LAW OF. A peculiar doctrine of the Scottish law, derived from the later Roman law, whereby, if any man, while suffering from the disease of which he ultimately died, burdened or conveyed away his heritable estate to the prejudice of his lawful heir, he was presumed to have so acted in consequence of his inability to resist importunity in the state of feebleness to which he was reduced, and his heir was entitled to avoid the deed. Two tests were fixed upon by the law as establishing the existence of a requisite degree of capacity—viz., survival of the donor for 60 days and his going unsupported to kirk or market. It was of no consequence that the object of the visit was neither to worship nor to buy and sell, but simply to evade the law of deathbed. If the individual was in a condition to take part in the service of the church or in the trade of the market, that was sufficient. Extreme old age, accompanied by manifest indications of the approach of death, was held equivalent to disease. But the deed of the oldest or most infirm man, or of the man who was laboring under the most mortal sickness, was not voidable if another disease had supervened of which he died, or if he were killed by accident. See DRESS; UNCLE INFLUENCE.

DEATH CUP. See FUNGI, EDIBLE AND POISONOUS.

DEATH DUTIES. The comprehensive English term for a variety of specific duties levied under acts of Parliament on the estates of deceased persons. Included under the term are (1) probate duties, (2) account duties, (3) legacy duties, (4) succession duties, (5) estate duties.

The *probate duty* dates back to the year 1694 and was a stamp duty levied as the price of obtaining probate or letters of administration. It has now, since 1894, been superseded by the estate duty. The *account duty* was of later origin and was payable by the beneficiary of a decedent. It has also been superseded by the estate duty. The *legacy duty* was created by Statute 20 Geo. III, c. 28 (1780), and is a stamp tax on receipts given by legatees to executors for their legacies. It varies in amount from 1 to 10 per cent of the legacy, according to the nearness of the relationship of the legatee to the decedent. When the legatee is a lineal descendant or ancestor of the deceased, the duty (1 per

cent) need not be paid if an estate or other death duty has been paid. *Succession duty* was created by Act of Parliament in 1853 (16 and 17 Vict., c. 51), and consists of a tax varying from $1\frac{1}{2}$ to $11\frac{1}{2}$ per cent (according to the degree of consanguinity) levied on the beneficiary of real property, or of personal property not subject to legacy duty, passing by descent or otherwise on the death of another. It is not, however, levied on property passing from husband to wife or wife to husband. The *estate duty* is a recent addition to the list of death duties, having been created in 1894 (57 and 58 Vict., c. 30). It is of a more general character than the earlier duties, being levied on all property, whether real or personal, "which, on the death of any person after Aug. 1, 1894, or at a period ascertainable only by reference to such death, passes either immediately or after an interval, either certainly or contingently," to another. Estates not exceeding £100 are exempt. The rates levied are graduated according to the value of the estate, ranging from 1 per cent on estates of £100 to £500, to 8 per cent on estates exceeding £1,000,000 in value. This tax is in some cases additional to other death duties and in other cases in lieu thereof. Taken together, these several duties constitute a most comprehensive system, which is being imitated in many of its features in the United States. (See INHERITANCE TAX; SUCCESSION.) Consult HANSON, *Death Duties*, and *Encyclopædia of the Laws of England* (2d ed., London, 1907).

DEATH OF MARLOWE, THE. A tragedy by R. H. Horne (1837), founded on the dramatic fate of the Elizabethan playwright.

DEATH RATE. See VITAL STATISTICS.

DEATH'S-HEAD CORPS. See BLACK BRU-SWICKERS.

DEATH'S-HEAD MOTH (*Acherontia atropos*). A species of hawk moth (q.v.), widely distributed over the Old World. It measures almost 5 inches from tip to tip of the extended wings; is dark in color, the body yellow with black markings, the thorax with pale markings which have some resemblance to a skull, and from which it derives its name: the upper wings mottled with brown, black, and yellow. The caterpillar is greenish yellow, the back speckled with black, with transverse lines partly blue and partly white, and feeds on the potato, tomato, and a variety of other plants. This insect is most frequently seen flying about in autumn and only in the mornings and evenings. It is remarkable for emitting a plaintive squeaking sound, which, with its dark color, and the skull-like mark on the thorax, has led to its being regarded with superstitious dislike, the sudden appearance of large numbers being popularly held ominous of evil; while in Mauritius a notion prevails that it casts a dust from its wings which produces blindness in persons on whom it falls, and its entering an apartment is therefore regarded with dread. The sound is produced by the palpi, the inner faces of which are striated and are rubbed against the proboscis; and it is heard strongly and sharply when the insect is confined in the hand. The death's-head moth is interesting upon still another account, as one of those insects which enter and plunder beehives, feeding upon the honey. Representatives of this moth are found in many countries, as *Acherontia atropos* in India, and everywhere we find it regarded with superstitious apprehension. Consult Kirby, *A Hand-*

book to the Order Lepidoptera, vol. iv, part ii (London, 1897).

DEATH'S JEST BOOK, or THE FOOL'S TRAGEDY. A drama by T. L. Beddoes, published posthumously in 1850 and founded on the actual stabbing of a thirteenth-century duke by his jester.

DEATH VALLEY. A narrow, elongated north-south desert valley in Inyo Co., Cal., lying between the Panamint Range on the west and the Funeral, Black, and Grapevine mountains of the Amargosa Range on the east (Map: California, H 6). The Panamint Range rises to a maximum altitude of 10,937 feet in Telescope Peak, while the eastern ranges have altitudes of between 7000 and 8000 feet. Much of the valley is below sea level. The lowest point of dry land in the United States occurs here and is 276 feet below sea level. It is interesting to note that Mount Whitney, the highest point in the United States (14,501 feet above sea level), lies at a distance of less than 80 miles from the point of lowest depression. The valley has a length of 150 miles. It varies greatly in breadth, being in few places less than 10 miles wide, and in some places having twice that breadth, while the distance from summit to summit of the bordering ranges is 20 to 30 miles. The valley is the sink of the Amargosa River, a stream which is dry for the greater part of the time throughout much of its course. Water is exceedingly scarce throughout the Death Valley region. Places where ordinarily drinkable water can be obtained in the valley are Saratoga Springs in the southeastern part, Bennett Wells on the west side, and a point near the mouth of Furnace Creek at the north end of the Funeral Range.

Several watercourses enter the valley, among them the Amargosa River from the south and Furnace Creek from the east, but it is only after heavy rains, which are of very rare occurrence, that they contain any water. The valley was formerly the bed of a salt lake along the east side. There is a white salt deposit, with borax appearing in several places. In the western part a salt marsh still exists.

The salty bottom of the valley is destitute of vegetation, but on the west side is bordered by mesquite; the east and west slopes possess a sparse vegetation of cacti and desert shrubs and grasses. A growth of tall coarse grass is found in the salt marsh in the northern section. Animal life is confined to a few species of desert animals, chiefly reptilia, such as snakes, lizards, and horned toads; but flocks of blackbirds have been seen there. The meteorological conditions are very interesting, and during one summer the United States Weather Bureau instituted special observations here. The temperatures in the valley during the summer are excessive, a maximum of 125° F. in the shade having been observed on successive days. They rarely fall below 70°. The air is very dry, and dew never forms, the relative humidity averaging only about 23 per cent. During five summer months not quite an inch and a half of rainfall occurred, and on only nine days was the rainfall sufficient to permit its amount to be measured. The summer rains are of local character. It is probable that 4 or 5 inches of rainfall occur during the year. The prevailing wind is from the south in summer time; the average wind velocity for the season is about 10 miles per hour, which is high for that locality. Sand storms and dust whirlwinds of a few hours' duration are common.

DEATH-WATCH. Any of a family of small beetles, Ptinidae, which live on dead animal and vegetable matter. They are usually of a cinnamon-brown color, the trochanters are situated between the femora and the coxae, and their larvæ are short, have six legs, no eyes, short antennæ, and require one or more years for development. Both the beetles and the larvæ do much damage to furniture, house timbers, ships' stores, drugs, books, etc. A few, such as the often injurious apple-twig borer (*Amphicerus bicaudata*), bore into living, solid wood. Another form, of both Europe and America (*Lasioderma serricorne*), is a serious pest of capsicum and of dried tobacco. Still another species thrives on opium. The "deathwatch" whose rapid ticking is so frequently heard in the quiet of the night is a species (*Sitotroga panicea*) of world-wide distribution which not infrequently feeds on paper, paste, and leather bindings of books. The tapping is caused by a rapid hammering with the head on some suitable resounding material and is probably a sexual call. It may sometimes be found tapping with remarkable force and agility on furniture where its action is observable. In England the name is sometimes applied to the book lice of the family Psocidae. See BOOKWORM.

DE AUGMENTIIS SCIENTIARUM, de ag-mên'shi-is si'en-shi-á'rúm (Lat., on the advancement of learning). A treatise by Francis Bacon. It forms the opening chapter of his *Instauratio Magna* and is, after the *Novum Organum*, his most important treatise. A good edition is *The Advancement of Learning* (New York, 1904), ed. by A. S. Cook. See also the bibliography under BACON, FRANCIS.

DE ÁVILA. See DÁVILA.

DEBÂCLE, dâ'ba'kl'. A French word originally applied in that language to the breaking up of the ice in a harbor or river, but introduced into English by geologists to express any sudden flood of water which bears before it opposing obstacles and leaves its path marked with confused and scattered fragments of rocks or other débris.

La Débâcle is the title of an historical novel by Emile Zola—by many regarded as his greatest work—published in 1892 and describing the downfall of the Second Empire in 1870.

DE BARY, dâ bî'rê, HEINRICH ANTON (1831-88). A German botanist. He was born at Frankfurt-on-the-Main and studied medicine and botany at Heidelberg, Marburg, and Berlin. After filling a professorship at Freiburg (1855-66) and Halle (1867-72), he was appointed rector of the newly established university at Strassburg. He was editor of the *Botanische Zeitung* from 1866 until his death. De Bary established the first botanical laboratory and introduced laboratory methods. His chief work was with the parasitic fungi, and in their study he began the method of securing all stages of development from spore to spore, a method which has extended to the study of the life histories of all plants. He was a notable teacher, and many of the most distinguished botanists are numbered among his students. He published a number of standard works on fungi and kindred subjects, such as *Die Mycetozoen* (1859; 1864); *Beiträge zur Morphologie und Physiologie der Pilze* (5 parts, 1864-82, partly in collaboration with Woronin); *Vergleichende Anatomie der Vegetationsorgane der Phanerogamen und Farne* (1872); *Vorlesungen über Bakterien* (1885; 1887).

DEBATABLE LAND. A tract of land situated between the Esk and the Sark, on the southwestern part of the border of England and Scotland, and at one time claimed by both kingdoms; hence its name. In 1542 commissioners appointed by the two crowns divided the land by a line drawn from east to west betwixt the two rivers. The upper half was adjudged to Scotland and the southern part to England. The Debatable Land continued long after to be the residence of freebooters and criminals, to whom its dubious state afforded a refuge. See BORDER.

DEBAT-PONSAN, de-bâ'-pon'sân', EDOUARD BERNARD (1847-1913). A French historical, genre, and portrait painter, born in Toulouse. He was a pupil at the Beaux-Arts in Paris and then of Cabanel, and won the Prix de Rome in 1873. His pictures include historical subjects, such as the dramatic "Gate of the Louvre on St. Bartholomew's Day" (1880, Clemond-Ferrand Museum); allegorical works, such as the famous "Nec Mergitur" (1898), inspired by the Dreyfus case; and genre paintings, like "The Untamable Mare" (1911), and "Those who Watch" (1912). They are executed in a finished, academic style and show literary rather than pictorial imagination. He was particularly successful with portraits, such as those of Paul de Cassagnac (1882), General Boulanger (1888), and Constans—Minister of the Interior.

DEBAY, de-bâ'. A family of French sculptors.—**JEAN BAPTISTE JOSEPH** the elder (1779-1863) was born at Malines and studied principally under Chaudet in Paris, where he settled permanently after living 15 years in Nantes. He was made an officer of the Legion of Honor in 1825 and conservator of the department of classical sculpture in the Louvre in 1846. Among his principal works are the marble statues of Charles Martel in the Versailles Museum, an equestrian statue of Louis XIV at Montpellier, two groups in marble of "Mercury and Argus," one in Montpellier and the other in Nantes, "Girl with a Shell" (Antwerp Museum); decorative figures for the hôtel de ville and the bourse at Nantes; two bas-reliefs for the Arc de Triomphe in Paris, and many portrait busts.—His son and pupil, **JEAN BAPTISTE JOSEPH** the younger (1802-62), usually called **JEAN DEBAY**, to distinguish him from his father, was born at Nantes and studied also under Bosio in Paris, where he won the Grand Prix de Rome in 1829. For his marble statue of a "Young Girl Slave" (1836, Museum at Valence) he received a first-class medal. Besides the statues of Charles VIII in the Versailles Museum, and of General Cambronne at Nantes, he made many decorative statues for public buildings and churches, but is best known for his portrait busts, which include those of Ampère (Palais de l'Institut, Paris), and Mustapha Ben Ismael and General Debilly, in the Versailles Gallery.—His brother, **AUGUSTE HYACINTHE** (1804-65), born at Nantes, was equally excellent as a sculptor and painter. He was a pupil of his father and, in painting, of Gros, in Paris, where he won the Grand Prix de Rome in 1823. His finest plastic work is "The First Cradle," which obtained a gold medal at the Universal Exposition of 1855. In the Louvre are his statues of the architect Perrault, and Mademoiselle Desbrosses. The figures of "Ocean" and "The Mediterranean," belonging to the south fountain of the Place de la Concorde in

Paris, and "Power" and "Moderation" before the Fontaine Saint-Michel, afford good examples of his style. His most remarkable painting is the so-called "Field of the Cloth of Gold" in the Versailles Museum, a composition on a gigantic scale, representing the meeting of Francis I and Henry VIII in 1520. "An Episode of 1793 at Nantes" and "Lucretia on the Collatine Hill" are in the Museum at Nantes.

DE BAY. See **BAJUS**, MICHAEL.

DE BEAUCHAMP, RICHARD. See **WARWICK**.

DE BEAUMONT, de bö'môn'. See **EON DE BEAUMONT**.

DE BEAUMONT. See **ELIE DE BEAUMONT**.

DE BEAUMONT, FRANÇOIS. See **ADRETS**.

DE BEAUNE, de bö'n', FLORIMOND. See **BEAUNE**.

DE BELLOY. See **BELLOY**.

DEBENTURE (ME. *debentur*, from Lat. *debentur mihi*, there are owing to me, from *debere*, owe). In the most general sense, a written acknowledgment of indebtedness. The term has long been in use in England to describe various classes of government obligations, as soldier's debentures, exchequer debentures, and custom-house debentures, and it is employed in the same sense in the United States (U. S. Rev. Stat., §§ 3037-3040). Of late years the term "debenture" has come into common use, especially in England, to designate company securities of all sorts, including the corporate bonds, which in the United States comprehend the greater part of such obligations. They need not be bonds, however, though they are usually of that character; and neither is it necessary, to give them the character of debentures, that they shall be issued by corporations, though most of them doubtless are. They may or may not be secured by mortgage or other charge on the property of the company issuing them. They differ from certificates of stock, in that they contain a promise, usually in the form of a covenant, to pay a principal sum, with periodical interest thereon, on a specified date in the future, and they are usually issued in series, and for the purpose of borrowing money thereon. They are commonly transferable and may be so drawn as to be negotiable.

When, as usually is the case, debentures are secured by a charge on the property of the company issuing them, the charge is in the form of a "floating security," as it is called, attaching at any given moment during the life of the debenture to all the property owned by the company at that time. The dissolution of the company causes the debentures to mature, even though the time for which they were given has not expired, and the floating security thereupon becomes fixed and definite, and the property may be reached by the debenture holders in an action for the appointment of a receiver and the enforcement of the security. From this it is evident that such debentures depend for their security upon the condition of the company from time to time.

The matter of issuing debentures and the nature of the security which they afford are largely regulated by general statutes providing for the incorporation of companies and sometimes by private acts for the government of individual corporations. Consult: Palmer, *Company Precedents* (8th ed., London, 1902); Manson, *The Debentures and Debenture Stock of Trading and Other Companies* (ib., 1894); Jones, *Treatise on the Law of Corporate Bonds and Mortgages*

(2d ed., Boston, 1894). See BOND; CORPORATION; SECURITY.

DE BÉTHUNE, MAXIMILIEN. See SULLY, DUKE OF.

DEBIL. A place in the south of Judah (Josh. x. 38). (See KIRJATH-SEPHER.) In Josh. xv. 7, where Debir has been supposed to be a name of a city, we should probably read *Midbarah*, 'to the wilderness,' and in Josh. xiii. 26 the correct reading seems to be *Lidebir* or *Lodebar* (q.v.).

DEBIT AND CREDIT. See SOLL UND HABEN.

DE BLOIS. See CHARLES DE BLOIS.

DE BOOR FRAGMENT, THE. Part of a manuscript of Philippus Sidetes published by De Boor (*Texte und Untersuchungen*, vol. 2, p. 170). The fragment contains a quotation from Papias, an Asiatic Church father writing about 150 A.D., in which the statement is made that "John and James, his brother, were put to death by the Jews." This quotation has caused much controversy, for, if accepted as true, it invalidates the tradition that John the Evangelist wrote the Fourth Gospel when an old man in Asia Minor. Those critics who believe that Christ's prophecy in reference to James and John, viz., "Ye shall indeed drink of my cup," was fulfilled, naturally accept the validity of Papias' statement. Against the truth of the statement, however, the claim is made that since, from the Epistle to the Galatians, we know that John outlived his brother, the author was incorrect in saying that the two met their death at the same time. On the other hand, it is not clear that the statement as to the death of the brothers is to be taken to mean that they died at the same time. It must nevertheless be admitted that the fragment has caused some confusion because of its use of the term "Theologus," which is usually not applied to John until the fourth or fifth century. In spite of this, however, Bacon contends that, "until some valid reason is advanced why the doubly attested statement of the martyrdom of James and John may not have stood on the pages of Papias-writing c.150 A.D., it must be accepted as the simple historical fact."

Consult: *Texte und Untersuchungen zur Geschichte der altchristlichen Literatur*, vol. 2, p. 170 (1889); against the acceptance of the fragment, Drummond, *The Character and Authorship of the Fourth Gospel* (London, 1903); and, for the acceptance of the fragment, Bacon, *The Fourth Gospel in Research and Debate* (New York, 1910).

DEBORAH (Heb., bee). A heroine who helped to deliver the Israelites from the oppression of the Canaanites and who in tradition becomes a prophetess and a "judge." She was the wife of Lapidoth and dwelt in the hill country of Ephraim (Judg. iv. 4-5). For 20 years, the story goes, Israel had been oppressed by the Canaanites, when Deborah stirred up Barak, son of Abinoam of Kedesh in Naphtali, and the two with an army went against Sisera, leader of the force of the Canaanite King Jabin, descended upon him from Mount Tabor, and routed his army (ib., iv. 10-16). Sisera himself, in flight, was slain while asleep by a woman, Jael, wife of Heber the Kenite (ib., iv. 11-22). A forty years' peace followed this success (ib. v. 31), though it should be added that the number 40 is to be regarded as a general term for a genera-

tion. The Song of Deborah (ib., v. 2-31) celebrates this victory, but there are some striking discrepancies between the song and the prose narrative in chap. iv. That the song is a contemporary record may be inferred from the archaic language and its general character. It is universally regarded by scholars as one of the oldest bits of literature in the Old Testament, but it makes no mention of Jabin and commemorates the discomfiture of Sisera. The text is obscure in some places and corrupt in others, but there is enough left to give this composition a unique position in the history of ancient poetry among the Semites. There is no valid reason to doubt that the ode was composed and sung by Deborah. In the prose narrative, which is considerably later, many scholars suppose that there is a reference to another event in which Jabin is chiefly involved and that the two occurrences have been welded together by making Sisera the leader of Jabin's army. Consult: Cooke, *The History and Song of Deborah* (1892); G. F. Moore, *Judges* (1895); A. Segond, *Le cantique de Debora* (1900); A. Stephan, *Das Deborahlied* (1900); Lagrange, *Le livre des juges* (1903); N. Schmidt, *Messages of the Poets* (1911); G. A. Smith, *Early Poetry of Israel* (1912); H. T. Fowler, *A History of the Literature of Ancient Israel* (1912); E. L. Curtis, *Judges* (1913); E. G. King, *Early Religious Poetry of the Hebrews* (1913).

DE BOUCHERVILLE, de bō'shēr-vil', SIR CHARLES EUGENE BOUCHER (1822-1915). A Canadian statesman. He was born at Boucherville, P. Q., and was educated at the College of St. Sulpice, Montreal. He graduated in medicine at Paris in 1843, and on his return to Canada practiced his profession for many years in his native district. He began his political career in 1861 and was a Conservative member of the Canada Legislative Assembly until 1867, in 1865 voting for confederation. In 1867-73 he was Speaker of the Legislative Council of the Province of Quebec, and he was Premier of that province from September, 1874, to Jan. 29, 1876, when his and his colleagues' dismissal by Lieutenant Governor Letellier de St. Just caused a political sensation. In 1879 he was appointed to the Dominion Senate, and in December, 1891, after the dismissal of Premier Honoré Mercier (q.v.) by Lieutenant Governor Angers, he again became Premier of Quebec, and retained that position until Dec. 16, 1892. In 1914 he was created K.C.M.G.

DEBOUCHING, dé-bōush'ing (Fr. *déboucher*, from *de*, from + *boucher*, to stop up, from *bouche*, mouth, from Lat. *bucca*, cheek). In military usage, the issuing of troops from out a narrow passage, wood, defile, or any other roadway which has compelled them to advance in column or other narrow formation.

DE BOW, JAMES DUNWOODY BROWNSON (1820-67). An American journalist and statistician, born at Charleston, S. C. He was editor of the *Southern Quarterly Review*, to which he contributed an article on the "Oregon Question," which attracted wide attention. In 1845 he left the *Southern Quarterly* and established *De Bow's Commercial Review* in New Orleans (1846), which was at once successful and was for many years an organ of ultrasectional opinion. In 1848 he became professor of political economy in the University of Louisiana and in 1850 head of the State Census Bureau, which he managed

with such distinction that he was appointed superintendent of the United States census (1853-55). He fostered, by lectures and pen, the material and intellectual interests of the South and later of the Confederacy, though he ultimately became a convert to the economy of free labor. He wrote *Industrial Resources of the Southern and Western States* (3 vols., 1853), and the greater part of *The Statistical View of the United States*, a compendium of the seventh census (1854), besides many statistical pamphlets.

DEBRECZEN, *dé-brét-sén*. A free Imperial city of Hungary, capital of the County of Hajdu, situated on a sandy but fertile plain, about 137 miles east of Budapest by rail (Map: Hungary, G 3). It is called "the Protestant Rome," being the chief Protestant centre in Hungary. The town, with its suburbs, is widely scattered. It possesses a number of handsome modern buildings, among which are the Rathaus, theatre, two old monasteries, and the Protestant church from the pulpit of which in 1849 Kossuth proclaimed the deposition of the Hapsburg dynasty. Its walls and fortifications have given place to broad promenades. Among its numerous educational institutions is the famous Protestant Collegium, with more than 2000 students, founded in 1531, with a library of 151,000 volumes. The manufactures of the town are clay pipes, cigars, machinery, brushes, bricks, vehicles, lumber, sugar, soap, and sausages. Its yearly cattle markets are of considerable importance. The city owns large cattle ranges in the surrounding territory. Pop. (commune), 1900, 75,006, 1910, 92,729, mostly Hungarian Protestants. Debreczen suffered severely during the Turkish War in the sixteenth century, and in the seventeenth century, when it had become a Protestant town, was attacked by the Imperialists. In 1849 the Hungarian Diet and government fled to Debreczen on the fall of Budapest. On July 3, 1849, it was taken by the Russians, and on August 3 it was the scene of a fierce battle between the Hungarians and the Russians.

DEBRY, *de-bré'*, or **DE BRY**, THÉODORE (1528-88). A Flemish engraver, goldsmith, and printer, born at Liège. Forced to emigrate on account of religious persecution, he settled at Frankfort-on-the-Main about 1580, where he worked as printer, engraver, and book-seller until his death. He also visited England, where he engraved the "Procession of the Knights of the Garter under Queen Elizabeth," 12 plates, after Geerarts, and "The Funeral of Sir Philip Sidney," 34 plates, after Thomas Lent (1587). He executed a number of engravings, which are of great value, but rather on account of the invention and originality displayed in them, than as works of art, although many possess the technical perfection of the old Dutch and Flemish masters. His subjects are sometimes grotesque and fanciful, but more often processions or dances with numerous figures. Among his most celebrated plates are 48 for Boissard's *Icones Virorum Illustrium* (1597-99); and those which he engraved for the *Collectiones Peregrinationum in Indiam Orientalem et Occidentalem* (1590-1634), familiarly known to English readers as the "De Bry Collection of Voyages." There were many editions of this work in different languages. An excellent collection of his prints is in the New York Public Library. He was also a medalist and designer for jewelry and plate. —His sons, JOHN THÉODORE (1561-1621) and

JOHN ISRAEL (?-1611), assisted him in many of his works. John Théodore had less imagination than his father, but was the better artist.

DEBS, EUGENE VICTOR (1855-). An American social agitator and candidate of the Socialist party for President of the United States. He was born Nov. 5, 1855, at Terre Haute, Ind. Between 1871 and 1883 he was a locomotive fireman on the Terre Haute and Indianapolis Railroad, a wholesale grocery salesman, and city clerk of Terre Haute. In 1885 he served as a member of the Indiana Legislature. He was grand secretary and treasurer of the Brotherhood of Locomotive Firemen from 1880 to 1893, when he resigned to organize and be president (for four years) of the American Railway Union. Under his leadership this Union won a large strike on the Great Northern Railway early in 1894, and then in the same year, having espoused the cause of the poorly paid Pullman workers, the Union brought about a great tie-up of the Western roads. This strike was ultimately broken by the interference of the Federal courts and by action of President Cleveland, based upon the right of the Federal government to maintain the uninterrupted transmission of the mails. Debs was arrested first upon a charge of conspiracy to murder, but the charge was never pressed, for want of foundation, although Debs was insistent in his demand that his name be cleared through trial on the charge in open court. In July, 1894, Debs, with the other officers of the Union, was arrested on the charge of violating an injunction issued by Judge Woods, and was sentenced to six months in jail for contempt of court.

Debs's introduction to Socialism began during his imprisonment in the Woodstock jail, where he was visited by Victor Berger and given Marx's *Capital* and other Socialistic works. In 1897-98 he was chairman of the National Council of the Social Democracy, and in 1900 he was the candidate of the Social Democratic party for President of the United States. Thereafter Debs spent most of his time as lecturer and organizer in the Socialist movement. He was the candidate of the Socialist party for President of the United States in 1904, 1908, and 1912. As one of the first "victims" of so-called "government by injunction," and because of his likable personality, Debs has commanded the respect of American unionists and radicals, even of those who do not accept his economic doctrines. Besides his articles published as contributing editor to the *Appeal to Reason* and also occasional magazine articles, his writings include a widely read speech on *Industrial Unionism* (1911). Consult S. M. Reynolds, *Debs: His Life, Writings, and Speeches* (Girard, Kaus, 1908). In 1914 Debs became a member of the editorial staff of the *National Rip-Rap*.

DEBT (OF. *dette*, *debte*, Lat. *debitum*, that which is owed, from *debere*, to owe, from *de*, from + *habere*, to have). In law, strictly speaking, a sum of money due upon a certain and expressed agreement. This obligation may be founded on simple contract, may be contained in a sealed instrument, or may be established by the judgment of a court. In this meaning a debt is a definite sum due, not merely a claim for damages. In some applications, however, the word has been much more broadly used, and it is probable that most courts would not confine it to the strict definition above given, unless required so to do by the context of a law

or the special circumstances of the case. Thus, it has been held that a debt may be a certain sum of money promised to be paid in the future as well as a sum already actually due and payable; but if the sum be payable upon a contingency at a future time, it cannot properly be called a debt. In its more general sense debt is that due from one person to another, whether money, goods, or service. Under the United States legal-tender statutes the term embraces any obligation by contract, expressed or implied, which may be discharged by money through the voluntary action of the party bound. A bequest of "whatever debts" might be due the testator at the time of his death has been held to include money deposited with his bankers. A tax is not of the nature of a debt, not being founded on contract, but being rather an impost laid by a government.

Under the dual form of government which obtains in this country, an important question in regard to debts was raised as to the provision of the United States Constitution forbidding the several States to pass laws impairing the validity of contracts. It was questioned whether an insolvency law adopted by a single State did not violate this provision, where it allowed a debt already existing to be canceled upon the debtor's complying with the regulations of the Insolvency Act. It has been settled by the courts that the States have the right to legislate in this manner, but subject to the power of the United States to enact a uniform law of bankruptcy (q.v.). Of course a State's insolvency law cannot impair the obligation of a contract existing before its passage. But in all contracts implying a debt entered into after its passage, it will be presumed that the parties to the contract have in mind the provisions of the law.

Formerly the courts, both in England and America, employed the drastic and often inhuman process of imprisonment of the debtor to enforce the payment of debts. But this has generally been done away with by statute. The present tendency of legislation is to afford an easy and simple procedure for the enforcement of debts, so that undisputed debts may be collected quickly and as summarily as is consistent with the right of defense and of appeal. The action of debt, or the simpler substitutes provided thereby for the reformed procedure in England and this country, is a civil suit, resulting in a money judgment and an execution levied on the property of the debtor for its satisfaction. Where the element of fraud, false pretenses, or concealment of property enters into the question, the courts, both in England and the United States, may still restrain and under some conditions imprison the debtor. For a fuller exposition of these principles and of other matters relating to phases of the general subject, see ABSCONDING; ATTACHMENT; BANKRUPTCY; CESSIO BONORUM; CREDITOR; DEBTOR; GARNISHMENT; IMPRISONMENT; INSOLVENCY; SEQUESTRATION; TRUSTEE PROCESS. Consult the authorities referred to under the titles treating of specific subjects, such as CONTRACT; BOND; ATTACHMENT; BANKRUPTCY; ETC., and also Bell, *Commentaries on the Statutes Relative to Diligence, or Execution Against the Movable Estate; Imprisonment, etc.* (Edinburgh, 1890), where a history of imprisonment for debt will be found, and the general treatises such as the *Commentaries of Kent, Blackstone, Stephen, Bell, Erskine, etc.*, referred to under LAW.

DEBT, ACTION OF. An old form of personal action in common-law pleading, employed to recover a sum certain, or capable of being ascertained by computation only. Formerly the declaration alleged the *debit et detinet*, on the theory that the defendant owed the money and was guilty of an unjust detention of the goods or whatever happened to be the consideration, but this fell into disuse and is no longer proper. Where the obligation is founded on a simple contract the declaration must allege the consideration, and if on a specialty or on a record it must be set out in full. Debt differs from assumpsit (q.v.), where a special promise is necessary. The action is still retained in some of the United States where common-law pleading is retained, but has been abolished by statute in England, where it originated, as well as in most of our States under the reformed-code procedure. See COMMON COUNTS; COMMON FORMS; FORMS OF ACTION; also PLEADING, and consult the authorities there referred to.

DEBT, PUBLIC. National debt has become a marked feature in the finances of modern states. In any strict sense the public debt designates all of the outstanding obligations of the government. These are of many kinds. Among them, e.g., in those states which conduct government savings banks must be included the sums due depositors. In countries which, like France, require the collectors of taxes to make payments at specified times, advancing if need be from their own resources the amount required, such advances must for the time being be regarded as part of the national debt. But it is not with these informal obligations, which correspond somewhat with the book debts of merchants, that the phrase "public debt" is generally concerned. It refers rather to the more formal obligations undertaken by governments and represented by formal instruments of indebtedness.

This formal debt may be divided into short-term and long-term obligations. To the former is frequently applied the expression "floating debt," and the analogy which this suggests with the transactions of corporations indicates the general nature of such indebtedness. These short-term obligations are normally used to anticipate revenues, and resemble the promissory notes issued by merchants in the course of their business transactions. As the latter frequently have a certain aggregate of outstanding notes, though individual notes be promptly paid when due, so the floating debt of the state may readily become a permanent feature in its finances by the creation of new debts running parallel to the payment of the old. When such debts become too numerous, and the obligation of repayment a source of embarrassment, it is not infrequent for them to be converted into funded or permanent debt.

The funded debt consists in obligations which mature at a more or less distant date or which are payable at the option of the government. Bonds maturing within a fixed period are familiar in American finance, e.g., the so-called ten-forties of the Act of March 3, 1863. But more commonly no time is set for the ultimate redemption of public obligations. In the national finance of European states it is usually understood that the government will not soon avail itself of the privilege of repayment. So much is this the case that on the continent of Europe the debts are spoken of as *rentes*, the emphasis being thereby wholly laid upon the

fact that the payment of interest alone is expected, while in England the greater part of the public debt is regarded as a series of perpetual annuities. A further form of public debt consists in irredeemable paper money. In essence it is a debt without interest, payable at the option of the government. See MONEY.

The public debt, in the sense in which it is known to-day, is essentially a creation of modern times. Emergencies in the mediæval state were met by enforced contributions from the people and in part by contraction of debt by the monarch. But the debt so contracted was a debt of the crown, and not of the state, and rested upon the personal credit of the ruler. With the growth of parliamentary power and the control of supplies by representatives of the people, state debts appeared. They were originally confined to states like Holland and England, where loanable capital was plentiful, and where the commercial classes were sufficiently influential with the government to insure against repudiation. Later they were extended even to states under despotic and irresponsible rule. In the beginning public debts frequently assumed the form of life annuities; but as these varied of necessity with the age of the persons who advanced money to the state, the complications of accounting were excessive; moreover, the amount of the advances which could be obtained in this way was necessarily limited. It was a simplification to issue so-called perpetual annuities with a definite annual payment, and the computation of life annuities gave way to the simple operations of interest. In Great Britain terminable annuities are still common, but they form a comparatively insignificant proportion of the total indebtedness of the government. The term "public debt" usually refers to the national debt alone. In its widest sense, however, it includes local indebtedness also. It is only within the past century that the municipalities have become debtors to any considerable extent; but at present the aggregate of municipal debts in the United States exceeds the national debt in magnitude. See FINANCE.

Causes of Debt. Public debt arises under three distinct sets of circumstances: 1. War expenditure. A modern war demands the expenditure of an enormous sum of money, and this sum is usually raised through loans. Debts of this class are naturally borne by the national government. 2. Public works. The increase in commercial intercourse and the rise in standards of national and civic life have required a great development of public improvements. The cost of these has been met partly by taxation, partly by the raising of loans. The debts incurred are borne sometimes by the national government, sometimes by the localities. Practice differs in the various states—a fact which must be taken into account in comparing the national debts of different countries. 3. The funding of floating indebtedness. The presence of a large volume of demand obligations embarrasses the workings of the treasury and impairs the credit of a government. When it is not convenient to pay them out of revenue, it is customary to change them into funded debt.

Theory of Public Debts. In the eighteenth century it was held by many writers on finance that a public debt increased a nation's wealth. Public bonds were regarded as a net addition to capital. The claim was also advanced that a public debt was a matter of indifference to the

state, since it merely represented money owed by one set of citizens to another. Adam Smith and his followers, on the other hand, were inclined to regard public debt as an unqualified evil. Modern opinion recognizes that the debts of a state, like those of an individual, are necessary or unnecessary, wise or foolish, according to the circumstances under which they are contracted. The expenses of a state are incapable of sudden contraction; its revenues, however, fluctuate to a considerable extent. Unless a large surplus is put by in favorable times, a deficit is inevitable at times when revenues fall off. Since the accumulation of a surplus seriously disturbs commerce and industry, the creation of floating indebtedness is frequently expedient. In time of war, when the honor and possibly the very existence of a nation are at stake, it is imperative that immense sums of money should be raised to meet the expenditures attendant upon mobilizing and equipping armies, building fleets, and preparing defenses. At such a time the ordinary sources of revenue fail; taxation sufficient to cover the abnormal expenditures would amount to a virtual confiscation of property and would so derange industry as to impair the capacity of a state to withstand a long-continued struggle. The raising of a loan shifts the burden to a period when industry will be better prepared to endure it. In the peaceful competition for commercial ascendancy great advantages are gained by those states or communities which are first to develop their resources. It is, therefore, often expedient to undertake public improvements which would be too costly to be paid for out of increased taxation. Such improvements, moreover, create new sources of revenue, and therefore may impose merely a nominal burden upon posterity. Certain classes of public works, e.g., state railways and telegraphs, yield a direct revenue which may be sufficient to cover depreciation and interest on the capital invested in them. It would be manifestly unreasonable to pay for such works out of taxation. To do so would unjustly burden the present taxpayer for the advantage of future generations.

While there are circumstances, then, under which the creation of public debt is abundantly justified, it remains true that in practice debts are often contracted to national detriment. The ease with which money is raised by loans leads often to reckless financing. Useless wars are undertaken, premature and unproductive public works are entered upon. The expediency of particular loans, however, is a matter to be decided by practical politics, not by financial theory.

The effect upon industry of the creation of a public debt has received thorough discussion from economists. When the government enters the market as a bidder for money, capital is drawn away from productive enterprises, and industry is in so far hampered. It may, however, happen that the demand for more capital will encourage saving, so that the loss to industry will not be measured by the whole extent of the public loan. If the loan is for productive purposes which would otherwise be undertaken by private enterprise, industry is not necessarily deranged. It makes some difference whether the loan is made at home or abroad. Owing to friction in the international flow of capital, a foreign loan may have far less effect upon national industry than a domestic loan.

Important political consequences frequently

result from the creation of a public debt. When the creditors of a state are its own citizens, a party vitally interested in the stability of the government is created. When a weak state incurs a large debt to foreigners, it may endanger its own autonomy. Egypt is a classical example of a state which has fallen under foreign control in this way.

Conversion or Refunding of Public Debt. Public debts are frequently created at a time of low national credit. To attract investors, it is necessary to issue bonds paying a high rate of interest. When national credit improves, it is possible to exchange high-interest obligations which are payable at the option of the government for others bearing a lower rate of interest. The exchange may be a direct one, in which case the government retains its former creditors; or a new loan may be issued to pay off the old obligations.

Almost every country which has a public debt has refunded it at various times. The refunding operations of the British Treasury extend through two centuries. Conversion has been frequent in the United States in both national and local finance.

The investor in public funds is naturally opposed to conversion. Part of the inducement for investing in bonds consists in the expectation that they will continue to bear a high rate of interest and so rise above par value after normal conditions return. In the United States the investor is usually insured against early conversion by the provisions of the loan, in other countries the same end is reached by the adoption of a settled policy of converting only after a considerable lapse of time. One method of insuring the investor against conversion is to issue low-interest bonds below par. Redemption of such obligations entails a heavy cost. This practice is generally regarded, however, as bad finance, and is not resorted to in the United States.

Repayment of Public Debt. Some parts of the public debt are so constituted as to be automatically extinguished. Such are the terminable annuities of British finance. Each payment includes, besides interest, a partial repayment of the principal. It would obviously be inconvenient to pay a large part of the public debt in this way, since payments would have to be made whether revenues were plentiful or not. Most frequently debt is paid by redeeming obligations which are due, or which are payable at the option of government, or by purchasing bonds in the open market and canceling them.

The policy of repaying public debts has often been called into question. In order to redeem a debt, a sum equal to the principal of the debt must be taken from the people by taxation; and it is the last portion of the taxes which is hardest to collect and which causes the greatest distress. Almost all modern states are growing in wealth and population; consequently it is to be expected that a debt which at present would be very difficult to pay will in the future be relatively insignificant. So long as gold depreciates in value, the burden of debt automatically grows less.

When a state is insufficiently provided with capital, its bonds are likely to be held by foreign capitalists. In repaying the debt the state may diminish the scanty supply of capital and so injure its own industries.

There are, however, cogent reasons for the redemption of public debts. A future generation

may indeed be more able to pay a given sum than the present generation; but the future will doubtless have correspondingly heavy obligations of its own. Gold may indeed depreciate, but it may also appreciate. The payment of debt may derange industry, but it unquestionably strengthens the credit of a nation and places it in a condition to meet emergencies. On these grounds the weight of modern authority favors the gradual redemption of public debts.

Debts of Leading Nations. The national debt of England is dated generally from the year 1693, with the loan to the government of the entire capital of the Bank of England, amounting to £1,200,000. In return for this loan the Bank received its charter and privileges. The needs of the government were pressing, and the debt, once started, grew rapidly, as the result of the vigorous foreign policy of William III. At the accession of the house of Hanover, in 1714, it had reached £50,000,000, and it grew throughout the following century, as a result of the several wars in which England found herself engaged. When, in 1793, the great struggle with France began, the debt was £260,000,000, and when it terminated with the Treaty of Vienna, in 1815, it had reached the sum of £885,000,000. The example set by England was followed by the other European countries, although before the closing years of the eighteenth century few of the states had contracted debts upon any considerable scale. The Napoleonic struggle, which involved all Europe, inaugurated an era of debt for modern states, and the nineteenth century witnessed a rapid growth of national indebtedness. The following table compiled from the reports of the Bureau of Statistics of the Department of Commerce and Labor gives the indebtedness of some of the principal nations, and of all the nations of the world combined, since 1800. The table shows that the progress of debt in most countries has been constantly forward, and that, with the exception of the United Kingdom and the United States, there has been no conspicuous reduction of the debt. The debt of the United Kingdom reached its maximum in 1815, when it amounted to £902,000,000.

American National Debt. The public debt of the United States was first reported, 1791, two years after the organization of the government, as \$75,463,476.52. In 1812, at the commencement of the second war with England, it had fallen to \$45,209,737.90. That war brought it up to a total of \$127,334,933.74. After peace was restored, the reduction was from \$3,000,000 to \$10,000,000 per year, until in 1835 it reached its lowest point, being only \$37,513.05. Thenceforward it increased, with fluctuations, until in 1860—the year before the Civil War—it was \$64,842,287.88 and the annual interest was \$3,443,687. This was a rate per capita on the whole population of \$1.91 debt and 11 cents interest. The outbreak of the Civil War made the raising of enormous sums of money imperative. Two small loans had been made just before—in 1858, \$20,000,000 in 5 per cents, and in 1860, \$21,000,000 in 6 per cents—the first to run 15 and the last 20 years. Of the last loan only \$7,022,000 was issued. Of the loans made necessary by the Civil War, the first was Feb. 8, 1861, \$25,000,000 at 6 per cent, to run 20 years, of which \$18,415,000 was reissued. On March 2, 1861, 6 per cent treasury notes were authorized

and \$35,364,450 issued. On the same date, \$1,095,850 was reissued to pay the Oregon war debt. On July 17, 1861, \$250,000,000 was authorized at 7 per cent, to run 20 years, with authority to issue any part in the form of treasury notes running three years at 7.3 per cent interest, or in notes not bearing interest, but payable on demand, or in treasury certificates for one year bearing 3.65 per cent interest; the whole amount of demand notes not to exceed \$50,000,000. An Act of Aug. 5, 1861, authorized the issue of 6 per cent bonds, running 20 years, to exchange for the one and three year notes just mentioned, with accumulated interest, at any time before their maturity; and the demand notes were made receivable for all dues to the government. Before the close of the year the demand notes, at first repented by the banks,

claims, running one year at 6 per cent. There were \$561,753,241 issued, all redeemed before 1866. In July, 1862, postage stamps were issued for currency and made a legal tender for sums less than \$5. In March, 1863, fractional currency was authorized in place of postage stamps, the amount limited to \$50,000,000. In March, 1863, a loan of \$900,000,000 was authorized, principal and interest payable in coin; but only \$75,000,000 was issued. The same act authorized \$400,000,000, in one, two, and three year treasury notes, interest not over 6 per cent, payable in ordinary money, and to be a legal tender for their face value. The actual issues were: of one-year notes, at 5 per cent, \$44,520,000. two-year notes, at 5 per cent, \$166,480,000. three-year notes, at 6 per cent, \$266,595,440; making the whole issue \$477,595,400; all canceled or exchanged before

DEBTS OF PRINCIPAL NATIONS, AND AGGREGATE FOR ALL NATIONS OF THE WORLD AT VARIOUS DATES FROM 1800 TO 1912

DATES	Austria	Belgium	France	Germany ¹	Italy
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
1800	\$170,327,500		\$689,923,705	25,549,125	.....
1820	480,323,550		¹ 1,192,292,500	180,861,500	.....
1850	¹ 603,312,500		2,676,575,000		¹ 194,660,000
1870	¹ 1,464,816,500	¹ 113,147,440		¹ 115,948,000	¹ 1,386,852,500
1880		¹ 246,994,341	¹ 4,065,946,151		¹ 2,218,861,200
1900	¹ 1,697,255,140	¹ 504,460,000	5,800,691,814	557,626,622	¹ 2,583,983,790
1905	¹ 1,107,464,025	¹ 544,052,979	¹ 5,856,706,403	¹ 608,849,400	¹ 2,560,606,000
1912	1,433,511,000	741,044,000	6,283,675,000	1,219,430,000	¹ 2,669,748,000

DATES	Netherlands	Russia	United Kingdom	United States	¹ World
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
1800	\$486,650,000		\$2,616,488,363	82,976,294	¹ 2,433,250,000
1820	770,776,000		\$4,381,975,906	91,015,566	7,299,750,000
1850	¹ 498,621,580		¹ 4,082,596,003	63,452,774	¹ 8,419,045,000
1870	¹ 792,434,540	¹ 1,450,950,000	3,896,006,550	¹ 331,169,953	¹ 22,410,232,000
1880	¹ 390,823,749	¹ 2,238,872,257	3,778,858,366	¹ 1,919,320,748	¹ 26,246,901,000
1900	466,419,294	3,167,320,000	3,060,926,304	¹ 1,107,711,257	31,201,759,000
1905	¹ 463,150,904	¹ 3,414,061,734	¹ 3,885,166,333	¹ 989,866,772	43,698,029,541
1912	467,709,000	4,604,945,000	3,527,270,000	1,027,575,000	41,736,701,000

¹ Prussia prior to 1870, figures for 1900 are exclusive of state debts, which in 1890-1900 amounted to \$2,015,958,000. ¹ 1789 ¹ 1810 ¹ 1802 ¹ 1793 ¹ 1830 ¹ 1814 ¹ 1815 ¹ 1845 ¹ 1852 ¹ 1847 (figures for Saxonia). ¹ 1851 ¹ 1853. ¹ 1857 ¹ 1868 ¹ 1869 ¹ Chiefly former debt of North German Confederation. ¹ Total debt less cash in the Treasury. ¹ 1872 ¹ 1879. ¹ 1883 ¹ 1885 ¹ 1876 ¹ 1882 ¹ 1899. ¹ 1899 ¹ 1903. ¹ 1902 ¹ 1911. ¹ The figures of aggregate national debts of the world are subject to slight revision by reason of the fact that for certain of the minor countries the latest available figures represent a year earlier than that represented by the chief countries included in the aggregate. There are also a few minor countries for which no satisfactory debt statement can be had.

were at a premium, and the interest-bearing notes were readily convertible into permanent 6 per cent bonds. On Feb. 12, 1862, \$10,000,000 more of demand notes were issued. In the same month a great war loan was authorized—\$500,000,000 of 6 per cent bonds, redeemable after 5 and payable after 20 years. The loan was readily taken, and the full amount was issued. In 1864-65, \$15,000,000 more was authorized of the same loan. In February, 1862, \$150,000,000 of legal-tender notes were authorized, of which \$50,000,000 were to take the place of demand notes. In July, 1862, \$150,000,000 more were authorized, and an equal amount in addition in March, 1863, making \$450,000,000 in all. These issues formed the currency known as "greenbacks," from the color of the paper. An Act in February, 1862, authorized the acceptance of \$25,000,000 of deposits, increased in March to \$100,000,000, on which 5 per cent interest was paid. In June, 1864, \$50,000,000 more was authorized at 6 per cent. This was a temporary loan, to be repaid on 10 days' notice, and was all redeemed before the close of 1866. In March, 1862, Congress authorized the issue of certificates of indebtedness to public creditors in the adjustment of

May 15, 1868. In March, 1864, a loan of \$200,000,000 was authorized at 5 or 6 per cent, principal and interest payable in coin: \$196,117,300 were issued at 5 per cent, to run 40 years (the 10-40s of 1864), and \$3,882,500 at 6 per cent. Most of the 5 per cents brought premiums from 1 to 7 per cent. In June, 1864, a loan of \$400,000,000 was authorized at 6 per cent (the 5-20s of 1864), of which \$121,561,300 was issued. In June, 1864, Congress authorized the issue of \$200,000,000 in 7-30 treasury notes, and in March, 1865, the sum was increased by \$600,000,000 more. The whole issue was \$829,992,500 of 7-30 interest-bearing notes, and the whole loan was redeemed by the middle of July, 1868. In March, 1865, a loan was authorized of \$600,000,000 in 6 per cent 5-20 bonds, to be used only for the payment of treasury notes or other obligations of the nation. Two issues were made: July 1, \$322,988,950 and \$379,616,050, and in July, 1868, \$42,539,350; all to redeem treasury notes and other obligations, but in no case to increase the public debt. In March, 1867, and July, 1868, there were issued \$85,150,000 of temporary loan certificates of deposit, bearing interest at 3 per cent, to redeem com-

pond-interest notes. In July, 1870, the great Refunding Act was passed. The Secretary of the Treasury was authorized to issue \$200,000,000 at 5 per cent, \$300,000,000 at 4½ per cent, and \$1,000,000,000 at 4 per cent, of 30-year bonds, principal and interest payable in coin, to be used only to redeem the 6 per cent or other early bonds. Besides these issues, there were guarantee bonds issued to the Pacific and other railroads, secured by mortgage on the roads. In January, 1871, the 5 per cent bonds were increased to \$500,000,000.

These enormous financial transactions have no parallel for extent in the world's history. Yet for a time there was much fear that such loans could not be floated; but when they were proved possible without recourse to the capitalists of foreign countries, the loyal people of the Union had abundant cause for congratulation. The loan of 1862 (\$515,000,000) was the greatest in amount and the most successful thus far attempted. Afterward, however, loans were not easily made, and the government was compelled to resort to currency and treasury notes and also compound-interest notes and certificates of indebtedness. The greatest test of the financial strength of the nation fiercely struggling to maintain its political existence was in 1864. On July 11, in that year, gold touched its highest point, \$2.85, and a paper dollar was worth in gold only about 38 cents.

From the period of the Civil War the surplus of revenue was applied to the public debt. As the bonds bearing the higher rates of interest were first extinguished, the interest burden diminished even more rapidly than the principal. Thus, while in 1865 the total interest-bearing debt amounted to \$2,381,000,000, and the annual interest charge to \$151,000,000, at its lowest point, in 1892, of \$585,000,000 principal, the interest charge was, in round numbers, but \$23,000,000. As the population had increased rapidly during the interval, the interest per capita had declined from 4.39 to 39 cents. After 1893 the amount of public debt was increased by the issue of bonds for the purpose of securing the Treasury against the drain upon its gold reserve. This issue of 5 per cent bonds was followed in 1898 by a further issue of 3 per cent bonds for the purpose of meeting the expenses of the Spanish War. By the Act of March 14, 1900, the 3, 4, and 5 per cent bonds were made convertible into 2 per cent bonds, which resulted in a considerable diminution of the annual interest charge. The interest-bearing debt of the United States on July 1, 1912, was made up of the following:

2% Bonds	.....	\$730,882,130
2½% "	.....	459,280
3% "	.....	113,945,460
4% "	.....	118,489,900
Total	.....	\$963,776,770

The following table presents the principal data relating to the development of the interest-bearing debt of the United States from 1791 to 1912:

TOTAL INTEREST BEARING DEBT

1791, Jan. 1	.....	\$75,463,476.52
1800, July 1	.....	82,976,294.35
1810	.....	53,173,217.52
1820	.....	21,015,506.15
1830	.....	48,565,406.50
1840	.....	3,873,344.00
1850	.....	63,462,773.55

1860 July 1	.....	\$64,842,287.88
1861	.....	90,580,873.95
1862	.....	365,504,826.92
1863	.....	707,581,634.47
1864	.....	1,359,930,763.50
1865	.....	2,221,311,918.29
1866	.....	2,332,331,208.00
1870	.....	2,046,455,722.39
1880	.....	1,723,993,100.00
1890	.....	725,313,110.00
1898	.....	847,367,470.00
1900	.....	1,023,478,860.00
1910	.....	913,317,490.00
1912	.....	963,776,770.00
1913	.....	965,706,610.00

Consult: Adams, *Public Debts* (New York, 1890); Bastable, *Public Finance* (London, 1895); Fenn, *The Public Funds* (ib., 1898); *Statistical Abstract of the United States* (annual, Washington); *Statesman's Year Book* (annual, London). See FINANCE; BANK, BANKING; ANNUITY; REFUNDING; MONEY.

DEBTOR. One who owes a debt or obligation to another. Strictly speaking, the relation of debtor and creditor arises only out of voluntary transactions between the parties and not as the result of a duty or obligation imposed by law. The position of the debtor and the rights of the creditor over him have varied greatly in the various stages of human, and especially of commercial, development. In primitive society the arrangements for borrowing and lending are rarely such as to enable the citizen to avail himself with security of his resources, or to assign such limits to the powers of the creditor as either the claims of humanity or his own true interests demand. On the one hand, lending is confounded with almsgiving, and the exaction of interest, and even of capital, is regarded as an act of inhumanity towards the poor. On the other hand, no sooner do the creditor's rights come to be recognized in anything like a legal sense than there seem to be no logical grounds on which any limits can be set to them. If he is entitled to exact the debt at all, he is entitled to seize the goods of the debtor; and if the debtor has no goods, he is entitled to his services, which also implies the possession of his person and even of power over his life. Moreover, from the theories of the domestic relations which usually prevail in early times, the person of the individual, where he is the father of a family, brings with it his wife, his children, and his slaves. The creditor thus becomes the master of the life and liberty of his debtor, and of all those who are dependent upon him. The provisions of the Mosaic law are an illustration of the manner in which, in the ruder forms of society, the laws of debt combine a degree of lenity with a severity which is equally alien to modern views. In this as in many other respects they are typical of the state of society to which they belong rather than a system peculiar to the Jews. If an Israelite became poor, it was a duty to lend to him, and no interest was to be exacted either in money or in produce. When the sabbatical year arrived, i.e., at the end of every seven years, there was a general remission of debts as between Israelites, and the near approach of the year of remission was not recognized as an excuse for declining to lend to an indigent brother (Deut. xv. 1-11). Pledges, it is true, might be taken, but even here the same humane principles prevailed. The upper millstone was sacred, for to take it would be to deprive the debtor of the means of subsistence. If raiment was the pledge, it must be returned before nightfall, when it might be required for a

covering; and the widow's garment could not be taken in pledge (Ex. xxii. 26, 27). In strange contrast to this is the provision (Lev. xxv. 39) that a poor Israelite may be sold to one possessed of substance, even when modified by the special provision that he shall serve as a hired servant, not as a bond servant, and shall be set at liberty when the year of jubilee arrives. Children were often given in pledge (Job xxiv. 9), and ultimately into slavery, in payment of debt (2 Kings iv. 1).

Both in Greece and in Rome the creditor had a claim to the person of the debtor. Previous to the time of Solon this arrangement had produced consequences at Athens closely analogous to those which afterward led to the struggles between the patricians and plebeians at Rome; and his abolition of it forms one of Solon's many claims to the character of an enlightened legislator. By the Twelve Tables it was enacted at Rome that if the debtor admitted the debt, or had had judgment pronounced against him for it, 30 days should be allowed him for payment. At the expiration of that period he was liable to be given into the hands of his creditor, who kept him 60 days in chains, exposing him from time to time publicly and proclaiming his debt. If no one stepped in to release him, the debtor at the end of that time might be sold as a slave or put to death. If there were several creditors, the letter of the law permitted them to cut their debtor in pieces, sharing him in proportion to their claims; but Gellius tells us that no Shylock ever was found in Rome. To treat him as a slave, however, and make him work out the debt, was the common practice; and his children followed his condition. The *Lex Poetelia* (326 B.C.) alleviated the condition of debtors to the extent, at least, of preventing summary imprisonment and of relieving all debtors for the future from being put in chains. There do not seem to have been any public prisons for debtors at Rome, and each creditor consequently was the jailer of his own debtor. In this circumstance we probably see the reason of the prominence which was given by the plebeians to a change in the laws of debtor and creditor, on the occasion of their first secession, in 494 B.C., and subsequently during the whole course of the struggles between the two orders.

During the feudal period the person in general was not attachable for debt, imprisonment being inconsistent with the duties of warlike service, to which every man was bound; and it was for the encouragement of commerce and in consideration of the merchant having to deal with strangers and foreigners that it was first introduced in the mercantile communities of Europe. By the Statute of Merchants it was enacted by the English Parliament, in 1282, that in lending money a merchant might bring the borrower before the Lord Mayor of London, or the chief warden of another good town, and cause him to acknowledge his debt and the day of payment. A recognizance (q.v.) was then enrolled, and an obligation written by the clerk and sealed with the King's seal and the debtor's. Failing payment, the creditor was entitled to produce this obligation and to demand a warrant to seize the person of his debtor and to commit him to the Tower. This barbarous practice of punishing misfortune as a crime flourished in England for 600 years, until the humanitarian sentiment of our own time, stirred into action by the efforts of Samuel Romilly and

other reformers, forced the abandonment of the practice. An impression of the extent of the hardship which it involved may be gained from the fact that, in the 18 months subsequent to the commercial panic of 1825, 101,000 writs for debt were issued from the English courts. In the year ending Jan. 5, 1830, there were 7114 debtors sent to prison in London, and on that day 1545 of these were still in confinement. In general it may be said that, up to the time of the reform legislation referred to, the prisons of England were crowded with debtors. The first statute affording partial relief to these unfortunates was passed in 1838, but it was not until 1868 that the system was finally abolished (Statutes 32 and 33 Vict., c. 62).

The practice of imprisonment for debt has also prevailed, though to a much more limited extent, in the United States. It was abolished in New York in 1831 and shortly after that date by the other States in which it had been permitted. In many of the States it has never been recognized. Both in England and the United States, however, a limited right of coercing a dishonest debtor by arrest in civil process is permitted by statute. It is generally allowed in actions for injury to the person or character, or for injury to or the wrongful taking of property, embezzlement by public officers or persons acting in a private fiduciary capacity as trustees; for misconduct in office or in any professional employment; in actions to recover possession of personal property, where it is concealed or kept out of the reach of the sheriff; and where the defendant has been guilty of fraud in contracting the debt or in avoiding payment. Women are generally exempt from arrest in all cases except actions for willful injury to person, character, or property.

As to the manner in which the position of the debtor has been mitigated by the general adoption of the principle of the bankruptcy and insolvency laws, see those titles. See also *DEBT*, and the titles there referred to.

DE BUEIL, HONORAT. See RACAN.

DEBUSSY, de-by'sé', CLAUDE ACHILLE (1862-). A prominent French composer, the acknowledged leader of the new French school. He was born Aug. 22, 1862, at Saint-Germain-en-Laye. When only 11 years of age he entered the Paris Conservatory, where his teachers were Lavignac in solfège, Marmontel in piano, and Guiraud in composition. After having carried off several prizes, he won the Grand Prix de Rome in 1884 with his cantata *L'Enfant prodigue*, a work of striking beauty and originality of expression (produced as an opera in Boston in 1910). The result of the first year of his sojourn in Italy was a symphonic suite, *Printemps*, which the Academy pronounced too advanced and unduly modern. Nothing daunted by this verdict, Debussy continued in his own characteristic style, and as the fruit of the second year sent the still more advanced *La Demoiselle élue* for female voices and orchestra on a text by Gabriel Sarrazin after Rossetti's "Blessed Damozel." This was followed by the exquisite *Petite Suite* for piano (four hands), *Suite Bergamesque*, three nocturnes for orchestra (*Nuages, Fêtes, Sérènes*), a string quartet. In 1902 he attracted wide attention with the symphonic poem *L'Après-midi d'un faune*, which elicited much critical discussion and many conflicting opinions, but also gained many friends for the new master. The same year witnessed

the first production, on April 30, in Paris, of Debussy's first dramatic work *Pelléas et Mélisande*. This immediately placed its author at the head of the new French school. In 1907 it was brought out in Germany and Belgium, in 1908 in Italy and the United States (New York, February 19), in 1909 in England. Since the death of Wagner no other musicodramatic work, with the exception of Strauss's *Salome* and *Elektra*, has caused such animated discussion as *Pelléas et Mélisande*. Even its detractors must admit its importance in the history of dramatic music. The next important work, three symphonic sketches, *La Mer*, appeared in 1905. The list of larger works is completed by the enumeration of a rhapsody for clarinet and orchestra (1911), a ballet, *Jeux* (1913); a second ballet, *Crimen Amoris* (1914). In 1913 Debussy published an expanded orchestral version of his earlier suite, *Printemps*. Four other dramatic works—*Chméné*, *Histoire de Tristan*, *Le diable au Beffroi*, *La chute de la maison Usher*—are still in manuscript. Debussy has also written a number of exquisitely graceful pieces for piano and songs of striking originality. His texts are selected chiefly from the works of Baudelaire, Bourget, Louy, Mallarmé, and Verlaine; and he favors such poems as are eminently suited to be wedded to his vague, intangible, and elusive musical strains.

Debussy's originality consists in the conscious employment of the higher overtones, by means of which the field of harmony has been considerably widened and enriched. By a skillful combination of this principle with the older church modes and the whole-tone scale—which latter is rather unduly favored—many new and interesting effects are obtained. The themes rarely assume a well-defined shape; they generally defy searching analysis because of their vagueness. The instrumentation is always fascinating, discreet, and exquisitely refined. In all Debussy's music not a bar can be found that even remotely suggests the commonplace. His whole art, in fact, is sublimated refinement. And for this very reason it never strikes deep, never grips the soul with that elemental force which is the peculiar attribute of the highest genius. Yet, in spite of all limitations, Debussy has exerted a marked and widespread influence not only upon contemporary French composers, but upon the younger composers of Spain, England, and the United States. Consult: F. Liebig, *Claude-Achille Debussy* (London, 1908); C. Caillard and J. de Bérus, *Le cas Debussy* (Paris, 1910); G. Setaccioli, *Debussy è un innovatore?* (Rome, 1910); J. Rivière, *Études* (Paris, 1911); C. Paglia, *Strauss, Debussy e compagnia bella* (Bologna, 1913).

DÉBUT, dā-byŭ' (Fr.). A word which signifies generally a "beginning" or "entrance," but especially applied to the first appearance of an actor or actress on the stage or to a first appearance in a particular theatre. In these circumstances the actor is called a *débutant*; the actress, a *débutante*. The word is used also for "entry into society."

DECA (Gk. *deka*, *deka*, ten). A common prefix or combining form meaning "ten," as in *decapolis*, a union of 10 cities; *decatalogue*, the Ten Commandments. *décamètre*, a measure of 10 meters, etc. From *deca* is formed:

Decade. A collection or group of ten. In its most common application it signifies a period of 10 years. The word was used in the calendar

of the French Republic to designate the week of 10 days. Each month of 30 days was divided into three decades. The days of each decade were named *primidi*, *duodi*, *tridi*, *quartidi*, *quintidi*, *sextidi*, *septidi*, *octidi*, *nonidi*, and *decadi*. The tenth, or *decadi*, was the day of rest, which, as the Republic subscribed to no definite religion, was devoted to the practice of and exhortation to virtue. The Republican year numbered 36 decades. The remaining five (in leap years, six) days were not numbered and were set apart as holidays at the end of the year.

DECACHORD (Gk. *dekachordos*, *dekachordos*, ten-stringed, from *deka*, *deka*, Lat. *decem*, Eng. *ten* + *chordē*, *chordē*, string, chord). A kind of guitar with 10 strings, similar to the common guitar, but larger in the body, and provided with a broader finger board. The lower strings have no frets, being used only as open notes.

DECADENCE (Fr. *décadence*, through ML. *decadentia*, from *de*, from + *cadere*, to fall). A term used with reference to works of art belonging to a school, nation, or race artistically in decline. In Greece art in all its forms reached its acme in c.450 B.C.; and though there are many exquisite works which were produced at a later period, they all belong, more or less conspicuously, to the decadence of Greek art. The century and a half beginning with Augustus (until about 150 A.D.) was the golden age of Roman art; after which there is a decadence which soon becomes very obvious and rapid. The art of the Italian Renaissance attained its highest development in the early sixteenth century, in the work of such masters as Michelangelo, Raphael, Leonardo, Titian, Correggio, after whom (except in Venice) came its decadence, to which even such artists as the Carracci and Caravaggio belong.

DECADENTS, dā'kā'dān' (It., Sp., Portug. *decadente*, from Lat. *de*, from + *cadere*, to fall). See SYMBOLISTS.

DECAEN, de-kān', CHARLES MATTHIEU ISIDORE, COUNT (1769-1832). A French general, who, having risen to the rank of general of division because of his services in the Rhemish campaigns of the war of the Revolution, won fame because of his share in the victory of Hohenlinden in 1800. In 1802 he was sent to India as captain general of the French possessions there, in connection with Napoleon's schemes for building up a new French colonial empire. Finding conditions in India hopeless for such plans, he made Mauritius the centre for some eight years of the destructive warfare which with the aid of Admiral Sinois he waged against British trade in the East. However, he was obliged to surrender to the English in 1810 and, having returned in 1811, was placed in command of the army in Catalonia. He compelled the English to raise the siege of Tarragona and was created Count in 1812. When Napoleon abdicated, Decaen entered the service of Louis XVIII, but on the Emperor's return from Elba again accepted a command under him. After the battle of Waterloo he lived in retirement. Consult M. L. E. Gautier, *Biographie du général Decaen* (Caen, 1850).

DECAGON (Gk. *deka*, *deka*, ten + *gōnia*, *gōnia*, angle). A geometric plane figure of 10 sides and 10 angles. When the sides are equal and the angles are equal, the figure is called a regular decagon. This figure is obtained from a regular pentagon (q.v.) by describing a circle around the latter, bisecting the arcs between its

vertices, and drawing lines from these vertices to the points of section. See POLYGON.

DECAISNE, de-kān', JOSEPH (1807-82). A French botanist, born in Brussels. He studied medicine and natural science in Paris and in 1830 became connected with the Museum of Natural History, in which he was made professor of botany in 1848. Three years later he was appointed to a similar post at the Jardin des Plantes. His published works include the following: *Herbarii Timoriensis Descriptio* (1835); *Plantes de l'Arabie heureuse recueillies par Botta* (1841); *Histoire de la maladie des pommes de terre* (1845); *Recherches anatomiques et physiologiques sur la garance* (1847); *Flora élémentaire des jardins et des champs*, jointly with Lemaout (1855; 1865); *Traité général de botanique descriptive et analytique*, jointly with Lemaout (1867); *Le jardin fruitier du Muséum* (9 vols., 1858-78); *Manuel de l'amateur des jardins*, jointly with Naudin (4 vols., 1862-72).

DECALOGUE (Gk. *dekálogos*, *dekalogos*, ten sayings, from *deka*, *deka*, ten + *lógos*, *logos*, word). The term usually applied by the Greek fathers to the law of the two "tables of testimony" given, according to the Book of Exodus, by Yahwe to Moses on Mount Sinai (Ex. xx. 1-17). According to the narrative, these tables were made of stone, and the commandments inscribed thereon were "written with the finger of God" (Ex. xxxi. 18). Afterward, when the tables were broken by Moses (Ex. xxxii. 19), he was commanded to hew others, on which Yahwe again wrote the words of the covenant (Ex. xxxiv. 28). These are said to be "the 10 words" (verse 28 h). The commandments are not numerically divided in the Pentateuch, and it has been supposed by some that the number 10 was chosen because 10 was considered the most perfect number. As, however, there are 10 distinct injunctions, it is superfluous to allege any other reason for the division than the simple fact that this is the correct enumeration. Philo divides them into two pentads, the first ending with "honor thy father and thy mother," etc., but the general opinion among Christians is that the first table contained those commandments which enjoin upon us our duty to God (comprising the first four), and the second those which enjoin upon us our duty to our fellow creatures (comprising the last six). The Talmudists make the introductory words, "I am the Lord thy God, which have brought thee out of the land of Egypt, out of the house of bondage," to be the first commandment, and, in consequence, to keep the number 10, they make the next two (verses 3-6) into one. But the words quoted obviously contain no command at all, and merely express the general reason why the Israelites should yield implicit obedience to the injunctions which follow. Hence Origen commences the Decalogue with, "Thou shalt have no other gods before me." His division is that in use in the Greek, and in all the Protestant churches except the Lutheran; while from the writings of Philo and Josephus it appears that such was also the division received in the Jewish synagogue. The Roman Catholic and Lutheran churches also make verses 3-6 one commandment. To preserve the number 10 they divide verse 17 into two commandments, the first being "Thou shalt not covet thy neighbor's house," and the second, "Thou shalt not covet thy neighbor's wife, nor his manservant," etc.,

to the end. The two tables are said to have been placed in the ark of the tabernacle as a testimony of Yahwe's revelation (Ex. xxv. 16).

Modern scholars have called attention to the fact that there are two texts of the Decalogue—(1) Ex. xx. 2-17, and (2) Deut. v. 6-21—which present some striking differences. The commands in both are the same, viz., (1) prohibition of any worship besides that of Yahwe; (2) prohibition of graven images; (3) prohibition of the use of the name Yahwe for vain purposes; (4) the Sabbath command; (5) command to honor father and mother; (6) prohibition of murder; (7) prohibition of adultery; (8) prohibition of stealing; (9) prohibition of bearing false witness; (10) prohibition of coveting one's neighbor's property. But the text in Deuteronomy is believed to contain various amplifications, notably in the case of the fourth, fifth, and tenth commandments; and, moreover, while in Exodus the reason for hallowing every seventh day is as a memorial of the creation of the world in six days and of God's resting on the seventh, in Deuteronomy the observance of the Sabbath is enjoined as a reminiscence of the Exodus from Egypt. Of the two versions that in Exodus is regarded as the older form, though even in this amplification are supposed to have been introduced which did not belong to it in its original form. In regard to the age of the Decalogue in its earliest form scholars differ. Many regard the moral rather than ritual tone, the prohibition of images, the Sabbath commandment, and the condemnation of the evil desire as evidences of a date later than the appearance of the great prophets. On the other hand, it has been urged that neither monotheism nor monolatry may have been originally intended, but only abstinence from worship of other gods and from placing their images in the presence of Yahwe, i.e., near him, that the Sabbath contemplated may have been the full moon, and that, in the tenth commandment, appropriation of that which has no owner is meant by the word translated 'coveting.' Traces of another Decalogue were discovered in Ex. xxxiv. already by Goethe. Here we find (verses 10-28) chiefly ritualistic ordinances: (1) not to worship any other god but Yahwe; (2) not to make any molten images; (3) to keep the feast of unleavened bread; (4) to give the firstlings to Yahwe; (5) to observe the feast of weeks; (6) to keep the feast of ingathering; (7) not to mix the blood of the sacrifice with leaven; (8) not to leave the fat of the paschal sacrifice till morning; (9) to bring the first fruits to Yahwe; (10) not to seethe the kid in the mother's milk. This decalogue, to which the phrase "the 10 words" in Ex. xxxiv. 28, if they are a genuine part of the text, would seem to refer, puts the emphasis upon the religious ceremonies. It has therefore been regarded by many scholars as older than the other. If the latter, with its stress upon moral duties, was earlier and enjoyed Mosaic authority, they find it difficult to understand how the former could have claimed to take its place, while the reverse can be more readily comprehended.

Consult: Procksch, *Die Elohimquellen* (1906); Volz, *Mose* (1907); Erdmanns, "The Covenant Code and the Decalogue," in *The Expositor* (1909); Sellin, *Einleitung ins Alte Testament* (1910); Gressmann, *Mose und seine Zeit* (Leipzig, 1912); Bade, *The Decalogue: A Problem in Ethical Development* (1914).

DECAM'ERON (It. *Il Decamerone*, from Gk. *deka*, *deka*, ten + *hēmera*, *hēmera*, day). A famous collection of stories by Boccaccio (q.v.). See GALEOTTO, PRINCEPE.

DE CAMPE, JOHN (1812-75). An American naval officer, born in New Jersey. He entered the service in 1827, became commander in 1855, and commanded the *Iroquois* at the capture of New Orleans in 1862. Afterward he played a gallant part in various actions on the Mississippi, especially under Farragut at Vicksburg. He was raised to the rank of commodore in 1866 and retired in 1870 as rear admiral.

DECAMP', JOSEPH RODEFER (1858-). An American figure and landscape painter. He was born in Cincinnati, Ohio; studied there under Duvencek, and at the Munich Academy. He established himself in Boston in 1893, and became an instructor in the school of the Boston Museum of Fine Arts. He was elected to the Society of American Artists in 1888. Impressionism, modified by a realistic treatment and sureness and solidity of execution characterizes his paintings. He received the Temple gold medal from the Pennsylvania Academy of Fine Arts in 1899, honorable mention at the Paris Exposition of 1900 for a "Woman Drying her Hair" (now in the Cincinnati Museum), and a gold medal at the St. Louis Exposition in 1904. He aroused great enthusiasm in Berlin in 1910 with "An Interior" and a "Lady Playing a Lute." Other fine paintings by him are: "The New Gown" (Wiltach Gallery, Philadelphia); "Sally" (Worcester Museum); a portrait of Dr. Horace Howard Furness and "Little Hotel" (Pennsylvania Academy, Philadelphia).

DECAMPS, de-kān', ALEXANDRE-GABRIEL (1803-60). A French genre and landscape painter. He was born in Paris, March 3, 1803, and studied with Abel de Pujol, but was in no way restricted by the traditions of the conventional and classic in art. Of early instruction he had received little, regarding lessons "monotonous." He preferred to grope his way alone, but in later years acknowledged himself handicapped for lack of early training. Once, visiting the studio of Millet, he exclaimed, "Ah! you are a lucky fellow; you can do all you wish to do." "The sting of his artistic conscience" was always with him, making him discontented and restless even over his best work. Decamps's genius finally expressed itself in landscape and genre, and in Oriental subjects which introduced both. His subjects were chiefly found in the streets, on the quays, and in the fields. He reveled in color and in effects of atmosphere and light, and he managed these qualities in his pictures in a fascinating manner. Before he visited the East, in 1827, he had painted suggestions of the Orient, and five years before Delacroix he laid the foundation of the French school of Orientalism. His first paintings of genre subjects, exhibited in 1831, were so popular that it was difficult for him to depart from that style of work, yet he aspired to the historical in his nine sketches of the history of Samson (*Musée des Arts Decoratifs*, Paris) and made various unsuccessful attempts at monumental compositions. As a landscape painter, he sympathized with Constable and was lofty and dignified in his interpretation of nature. Light and atmosphere dominated his works—the modern note that was handed on to the school of impressionists. Decamps liked to indulge in satirical work, and "The Monkey Ex-

perts" and his travesties of Charles X display his skill in that direction. He touched the high-water mark of his popularity in 1839, in his exhibits at the Salon, where his "Café in Asia," "Street of a Roman Village," "Children Playing Near a Fountain," and other examples of his figure subjects and landscapes made him chevalier of the Legion of Honor. But the authority of the classic school and lack of official recognition made Decamps uncertain of himself and discouraged with his profession. In this mood, and suffering besides from a nervous illness, he burned many of his works and retired to the country, neglecting art for many years. He lost his life, Aug. 22, 1860, as the result of an accident while riding to the hunt. Decamps has been worthily represented in the Louvre since 1903; the Wallace collection, London, possesses 28 of his pictures, and others are in the Metropolitan Museum, New York, the Brooklyn Institute, and many other European and American galleries. He left about 100 lithographs and 20 etchings. Consult the monographs by Chaumelin (Marseilles, 1861); Moreau (Paris, 1869); Clément, in *Les artistes célèbres* (ib., 1886); Hédiard, in *Les maîtres de la lithographie* (Le Mans, 1892); Im-Thurn, *Scheffer et Decamps* (Nîmes, 1876); Chesneau, *Mouvement moderne en peinture: Decamps* (Paris, 1861); Stranahan, *Modern French Painters* (New York, 1888).

DE CANDOLLE, de känd'ol', ALPHONSE LOUIS PIERRE PYRAME (1806-93). A celebrated botanist, son of Augustin Pyrame de Candolle. He was born in Paris. His early education, like that of his father, was obtained in Geneva, where the greater part of his life was spent. Besides making botanical investigations of his own, he continued his father's monumental work, the *Prodromus Systematis Regni Vegetabilis*. His most important botanical writings are: *Introduction à l'étude de la botanique* (Paris, 1835); *Géographie botanique* (ib., 1855); *Lois de la nomenclature botanique* (ib., 1867); *La phytographie ou l'art de décrire les végétaux* (ib., 1880); *Origine des plantes cultivées* (ib., 1883). Besides these works he wrote a history of the sciences and scientists of the last two centuries (Geneva, 1872) and edited the memoirs and souvenirs of his father (ib., 1862).

DE CANDOLLE, AUGUSTIN PYRAME (1778-1841). A celebrated Swiss botanist. He was born in Geneva, Switzerland, where he obtained his early education. While still a youth, his ability to study and his attainments in literature were in marked contrast to his weak constitution. The gracefulness of his verse led Florian to predict a future for him as a poet. Law and medicine at first attracted him, but his love of plants, which had been aroused in 1792, while he was living with his mother in a village during the siege of Geneva, and which had been growing, through the influence of Saussure and especially of Vaucher, led him to adopt the study of botany as his life work. In 1796 he removed to Paris, where his first works, *Historia Plantarum Succulentarum* (Paris, 1799) and *Astragalologia* (ib., 1802), attracted the attention and gained him the friendship of scientists, among whom were Cuvier, to whose chair in the Collège de France he was elected in 1802; and Lamarck, who intrusted to him the publication of *Flore Française* (ib., 1803-15), in the introduction of which work he elaborates

and enforces Jussieu's natural system of plant classification as opposed to the Linnæan or artificial system. In 1804 the medical faculty of Paris awarded him the degree of M.D. Beginning with 1806, he spent six summers in the service of the government making a botanical and agricultural survey of the entire country, a report of which appeared in 1813. In 1807 he became botanist and director of the botanical garden in the medical faculty of the University of Montpellier, and three years later was transferred to the newly created chair of botany in the science faculty. During this incumbency he published *Théorie élémentaire de la botanique* (Montpellier, 1813; 2d ed., 1819; reprint, 1844)—a work that greatly extended his reputation and the popularity of the natural method of plant classification. In 1816 he accepted the newly founded chair of natural science and, conjointly with his son, the directorship of the botanical garden at Geneva, which offices he held until 1834, when his son succeeded him. He spent the remainder of his life in Geneva. In 1824 he commenced the *Prodromus Systematis Regni Vegetabilis* (Paris, 1824-74), based upon a former work (*Regni Vegetabilis Systema Naturale*), which had been planned upon too prodigious a scale for one man to complete, and of which only two volumes were published, in 1819 and 1821 respectively. Even of this more condensed work he was able to complete only seven volumes; the remaining 14 are the work of his son. He published other books and pamphlets, whose value, though considerable, is eclipsed by the works already mentioned. As a lecturer he exerted a wide influence and as a citizen was highly esteemed. Among the numerous honors awarded him was the cross of the Legion of Honor, which he received from Louis Philippe.

DECAP'ODA (Neo-Lat. nom. pl., from Gk. δέκαπους, *dekapous*, from *deka*, *deka*, ten + *πούς*, *pous*, foot) 1. The largest and most important order of malacostracan crustaceans, distinguished by the fact that the carapace is firmly grown to the dorsal side of all the thoracic segments, and that the last five pairs of thoracic appendages serve as walking feet, while the first three pairs are mouth organs. All of the crustaceans ordinarily used for food (crabs, lobsters, shrimps, and prawns) are decapods. Many hundred species are known, and they are found in all parts of the world, on land and in fresh water, but chiefly in the sea. The decapods contain three groups—the long-tailed (*Macrura*), the short-tailed (*Brachyura*), and the peculiar-tailed (*Anomura*). The first has the abdomen long and covered by a hard shell, and the lobster, crayfish, prawn, etc., are good illustrations; the second suborder has the abdomen very short and weak (this group is made up of the crabs); while the third includes the hermit crabs, which seem to be intermediate between the others. See CRAB; CRUSTACEA, LOBSTER.

2. A suborder of dibranchiate cephalopods, having 10 arms, the squids. See CEPHALOPODA. SQUID; and Colored Plate of OCTOPODS AND DECAPODS.

DECAP'OLIS (Lat., from Gk. Δεκάπολις, *De-kapolis* = *deka*, ten, *polis*, a city). A geographical term used in Josephus (e.g., *Wars*, iii, ix, 7), the New Testament (Matt. iv. 25; Mark v. 20; vii. 31), and other ancient writings to designate certain districts in and near Pales-

tine, situated mainly east of the Jordan. The Decapoli was a confederacy, or league, originally of 10 cities, though the number was not constant, apparently having been increased in the second century. The details of the history of the confederation are somewhat obscure. Its outlines can be recovered, however, with a good degree of certainty.

When Alexander the Great conquered the East (331 B.C.), the ancient Semitic world was at once opened to the influences of Greek civilization. Many of Alexander's veterans either settled in cities already founded or established new ones for themselves. Palestine, outside of Judæa proper, was not exempt from this movement, and soon here and there throughout the ancient Hebrew territory numerous Greek cities came into existence. These cities, all constituted after the same general idea of the Greek *polis*, were centres of Greek culture. During the Maccabean War of Independence (167-141 B.C.), waged by the Jews against the Greek-Syrian Kingdom, the sympathies of these cities were with Syria. Consequently, with the triumph of the Jews, and especially during the reigns of the Asmonean princes, John Hyrcanus (135-105 B.C.) and Alexander Jannæus (104-78 B.C.), they suffered great hardship, in many cases being deprived of their independence. In 63 B.C., when Pompey took charge of affairs in Syria and Palestine in the name of Rome, he freed them from the Jewish yoke. It was probably at this time that 10 of these cities formed the league known as the Decapolis. The charter members seem to have been Scythopolis (*Beisân*, the only one west of the Jordan), Dion, Pella (*Pahîl*), Gadara (*Umm Kays*), Hippos (*Suseh*), Gerasa (*Jerdâch*), Philadelphia (*'Amman*), Damascus, Raphana, and Kanatha (*Kana'ât*). Such, at least, is the list given by our earliest authority, Pliny the Elder (*Hist. Nat.* v, 18), in the first century; though it must be remembered that this list represents only the cities which belonged to the confederation in Pliny's time. There is strong reason to believe that Damascus was not one of the original group, lying too far to the north, but that in its place was Abila, generally reckoned as a later addition. It is also debated whether Raphana or Samaria is to be considered as one of the primary number. (Consult Hölcher, pp. 97 f.) The geographer Ptolemy, in the second century, omits Raphana, but adds nine other names, most of them of cities belonging to the district just south of Damascus, making 18 in all constituting the league in his time. The purpose of the confederation was in part to secure better protection against enemies, such as the Jews and the Arabian tribes, who were naturally hostile to Roman and Greek influences. Another equally powerful motive was the desire to obtain better trade advantages. The members of the league were all situated on trade routes, and the influence they exerted is seen in the passing over from Greek into Hebrew of many commercial terms and names. Each one of these cities covered with its jurisdiction a large adjacent district. Yet the Decapolis was not one solid territory, but between the districts belonging to the respective cities were large tracts governed by the various tetrarchies, or other forms of government permitted by Rome to exist under her general supervision. The most compact part of the Decapolis lay just south and east of the Sea of

Galilee. Here the regions of Scythopolis, west of the Jordan and on the main line of communication with the East-Jordan territory, of Hippos, east of the Sea of Galilee, and of Gadara, south of Hippos, on the Hieromax (the ancient *Yarmūk*), were contiguous, each possessing a section of the shore of the lake. South of Gadara, bordering on the Jordan valley, were Pella and Dion, which, from their Macedonian names, were both probably founded by Alexander's veterans. East of these were the districts belonging to Abila, on the Hieromax; Gerasa, farther south and very extensive; and Philadelphia, the ancient *Rabbah-Ammon* (Deut. ii. 11), the most southern member of the league. To the northeast were the cities Kanatha, the ancient *Kenath* (Num. xxiii. 42), both on the western slope of the Haurān Hills, and Damascus. Other members, such as Edrei and Bosra, though old cities, were late additions and carried the influence of the league eastward, south of the Haurān.

As to their political constitution, it seems to have been of an uncertain character. The independence to which they were restored by Pompey gave them the right to elect communal councils, to coin money, to offer asylum, to hold and administer property in the surrounding territory, and to associate together for defense and trade. At the same time the administration of their affairs was subject to review by the Governor of Syria, their coins bore the Imperial image; they were subject to taxation by Rome and to service in her military system; and even their political connections were determinable by the Emperor, as when, in 30 B.C., Augustus transferred some of them from the Province of Syria to the direct control of Herod.

From the organization of the league until the third century—a period of nearly 300 years—the Decapolitan country was exceedingly prosperous. When Trajan organized the Province of Arabia (106 B.C.), the security of the region was assured, commerce expanded, literature and art flourished, and in all conditions this was one of the most favored regions of the Empire. Of the cities making up the league, some were of more than ordinary size and importance. The ruins of Gerasa are very extensive; the amphitheatre of Philadelphia had a seating capacity of more than 7000; Gerasa had a *naumachia*. Greater than any of these, in Josephus' day, was Scythopolis, the ancient *Beth-shean* (Josh. xvii. 11), west of the Jordan, famous for its linen manufactures. The confederation seems to have dissolved gradually. Some of the cities became incorporated with the Province of Arabia; others maintained their independent position until the break-up of the Roman Empire.

Consult: Schürer, *History of the Jewish People in the Times of Jesus Christ* (5 vols., New York, 1885); G. A. Smith, *The Historical Geography of the Holy Land* (11th ed., 1904); Hölsscher, *Palästina in der persischen und hellenistischen Zeit* (Berlin, 1903); Schumacher, *Across the Jordan* (London, 1899).

DE CASSAGNAC, *de kâ-sâ'nyâk'*, PAUL GRANIER. See GRANIER.

DECATUR. A city and the county seat of Morgan Co., Ala., on the south bank of the Tennessee River, about 18 miles above the Muscle Shoals, and on the Louisville and Nashville and the Southern railroads (Map: Alabama, B 1).

It has repair shops of the Louisville and Nashville, car works, engine works, tannery, bottling plants, and manufactures of lumber, sashes and blinds, fertilizers, cigars, flour, cottonseed oil, and various other products. There are two infirmaries, a hospital, and a Federal building. Pop., 1890, 2765; 1900, 3114; 1910, 4228.

DECATUR. A town and the county seat of De Kalb Co., Ga., 6 miles east-northeast of Atlanta, on the Georgia Railroad (Map: Georgia, B 2). It is a popular residential place and contains the Agnes Scott College (Presbyterian) for women, the Donald Frazer (Presbyterian) High School for boys, and a Carnegie library. Here, on July 20, 1864, the battle of Peachtree Creek (q.v.) was fought, the Confederates, under General Hood, attacking unsuccessfully part of Sherman's army under Generals Thomas and Schofield. Decatur, named after Commodore Stephen Decatur, was settled and incorporated in 1823. The water works are owned by the town. Pop., 1900, 1418; 1910, 2466.

DECATUR. A city and the county seat of Macon Co., Ill., 38 miles east of Springfield and 173 southwest of Chicago, on the Sangamon River, and on the Illinois Central, the Wabash, the Cincinnati, Hamilton, and Dayton, and the Vandalia railroads (Map: Illinois, D 4). It contains a Carnegie library, Fairview, Lincoln, Nelson, and Torrence parks, a hospital, a home for aged and orphans, and James Millikin University, founded in 1901. The city is in a fertile agricultural region and, owing to its exceptional railroad facilities, has large trade and shipping interests, particularly in grain. It is also an important industrial centre, manufacturing iron, soda fountains, corn shellers, starch, corn flour, meal, hominy, plumbing, water-works equipment, electric-light fixtures, coffins, etc. Decatur adopted the commission form of government in 1911, consisting of a mayor and four commissioners elected every four years. The water works and electric-light plant are owned and operated by the municipality. Decatur was settled in 1830 and incorporated six years later. Lincoln received his first indorsement as presidential candidate at the Illinois Republican Convention, held here on May 6, 1860. Decatur is also the birthplace of the Grand Army of the Republic, Post 1 having been organized here on April 6, 1866. Pop., 1900, 20,754; 1910, 31,140, 1914 (est.), 37,525.

DECATUR. A city and the county seat of Adams Co., Ind., 21 miles southeast of Fort Wayne, on St. Mary's River, and on the Toledo, St. Louis, and Western, the Erie, and the Grand Rapids and Indiana railroads (Map: Indiana, E 2). It has several fine stone quarries, heading, handle, and hoop factories, and manufactures of lumber in various products, machinery, tiles, sugar, saddlery, fences, furnaces, and gloves. There is a Carnegie library and a Knights of Pythias home. Decatur was settled in 1840 and incorporated in 1882. The government is administered by a mayor, elected every four years, and a city council. The city owns and operates its water works and electric-light plant. Pop., 1900, 4142; 1910, 4471.

DECATUR. A city and the county seat of Wise Co., Tex., 40 miles north by west of Fort Worth, on the Fort Worth and Denver City

Railroad (Map: Texas, D 3). It is the seat of the Decatur Baptist College and contains a park and fine courthouse. The city is the centre of a corn and cotton-growing region and has cotton gins, a cottonseed-oil mill, a rolling mill, a canning factory, a flour mill, and an ice plant. Limestone is extensively quarried in the vicinity. Decatur owns its water works and electric-light plant. Pop., 1900, 1562; 1910, 1651.

DECATUR, STEPHEN (1751-1808). An American naval officer, born in Newport, R. I., of French ancestry. He early went to sea on a merchantman and during the Revolution commanded privateers. In 1798 he became a captain and was put in charge of the *Delaware*, 20 guns, with which he captured two French privateers. In 1801 he left the navy and went into business in Philadelphia. His son Stephen attained great distinction in the navy.

DECATUR, STEPHEN (1779-1820). An American naval officer, born in Sinnepuxent, Md., Jan. 5, 1779. He entered the navy as midshipman on board the *United States* in 1798. In November, 1803, he had command of the *Norfolk* and afterward of the *Enterprise*. On Feb. 16, 1804, at the head of a small party, he made a dash into the harbor of Tripoli and burned the frigate *Philadelphia*, which had fallen into the hands of the Tripolitans. In recognition of this act, which Admiral Nelson pronounced "the most daring of the age," he was made captain and was presented with a sword. Decatur had much more hard fighting in the harbor and neighborhood of Tripoli and in all cases showed the utmost daring and bravery. In 1812 he was in command, as commodore, of a squadron off the Atlantic coast and on October 25, in the *United States*, captured the English frigate *Macedonian*. From 1813 till the summer of 1814 he was forced by a British blockading squadron much superior to his own to remain in the harbor of New London. In January, 1815, he attempted to get to sea from New York with a small squadron. His flagship, the *President*, was injured by striking on the bar at Sandy Hook. He had not proceeded far when he was pursued and forced to engage in an unequal fight. He was finally overpowered and compelled to surrender and was taken to Bermuda with his frigate. He was soon paroled and in May, 1815, sailed from New York as commander of three frigates, one sloop, and six brigs and schooners, to operate against Algiers. He captured two important vessels; but the war was soon concluded by a treaty abolishing the demand upon the United States for tribute and giving up all prisoners. He made similar arrangements with the rulers of Tunis and Tripoli and thus put an end to the enslaving of the Americans by the corsairs of those countries. In November, 1815, he was made navy commissioner, with Commodore Rodgers and Porter, holding the office until his death, March 22, 1820, in a duel at Bladensburg, near Washington, with Commodore James Barron (q.v.). Consult the *Life* by Mackenzie (Boston, 1846), and Brady, *Stephen Decatur* (ib., 1900). His nephew, **STEPHEN** (1815-76), was commodore in the United States navy.

DECAZES, de-káz', ELIE, DUC (1780-1860). A French statesman. He began his career as a lawyer, became a judge in Paris, and in 1806 was called to Holland by King Louis, who

esteemed him highly as his trusted counselor. Afterward he became secretary to Napoleon's mother, Letizia Bonaparte, and the same year Counsel to the Court of Appeals. He joined the Bourbons after the restoration and won the favor of Louis XVIII, who made him Prefect of Police, Minister of Police, and in 1818 Prime Minister. He carried out a number of liberal measures, but did not succeed in pleasing the radicals, and at the same time incurred the enmity of the ultraroyalists, who availed themselves of the murder of the Duc de Berry in 1820 to accuse Decazes of complicity in the crime, alleging that his revolutionary policy had instigated the assassin in his deed. The King accepted his minister's resignation with great reluctance, made him a duke, and sent him as Ambassador to England. Having returned in 1821, Decazes took part in all important debates in the Chamber of Peers, opposing the government, and after the revolution of 1830 supported the Orléans dynasty. He retired from public life in 1848 and thereafter devoted himself to the administration of his estates. Consult E. Daudet, *Louis XVIII et le duc Decazes* (Paris, 1899).

DECAZES, LOUIS CHARLES ELIE AMANIEU, DUC DE GLÜCKSBURG (1819-86). A French diplomat, born in Paris. His father was the statesman Elie Decazes, and through his influence Decazes became Secretary to the Embassy in London, and afterward Minister Plenipotentiary to Spain and Portugal. The revolution of 1848 forced him to retire to private life, but he remained a devoted Orleanist and always hoped for a restoration of the dynasty. In 1871 he was elected a deputy to the Assembly, and in 1873, after being for a short time Ambassador at London, he was given the portfolio of Foreign Affairs. He was retired in 1877 and failed in subsequent efforts to return to political life.

DEC'AN (Hind. *dakhan*, Prak. *dakkhana*, Skt. *dakṣa*, southern, pertaining to the right hand, from *dakṣa*, right hand, connected with Gk. *δεξιός*, *dezios*, Lat. *dexter*, right). A term sometimes applied to the peninsula of India (Map: Asia, J 7), south of the river Nerbudda, but now generally restricted to the portion bounded on the north by the Nerbudda and on the south by the river Kistna or Krishna. The name is also applied to the entire triangular plateau which forms the larger part of the Asiatic peninsula of India and is the official designation of a division of the Bombay Province.

DECCAN HEMP. See **HIMMUSCUS**.

DECEASED WIFE'S SISTER. See **AFFINITY**; **CONSANGUINITY**; **MARRIAGE**.

DECEBALUS, de-séb'á-lüs (Lat., from Gk. *Δεκέβαλος*, *Dekēbalos*; perhaps a title of honor, equivalent to *king*). A king of Dacia, a military leader of much ability, for years a formidable enemy of Rome. He crossed the Danube during Domitian's reign, overran Mesia, and defeated the Imperial army under Cornelius Fuscus. Later he forced Domitian to conclude a treaty by which Domitian was to pay an annual tribute. He was completely overthrown by Trajan in 105 A.D., and his territories were reduced to a Roman province. He committed suicide to escape capture by the conquerors, about 106. See **DACIA**; **TRAJAN**.

DECEDENT (Lat. *decedens*, from *decedere*, to depart, die). Strictly, a dying person; in

English and American law, a deceased person—the term being employed only in connection with the passing of the estate of such person, or the administration thereof. When the estate in question is disposed of by will, the decedent is properly described as “testator,” or “devisor,” and thus the term “decedent” has come to be commonly appropriated to a person dying intestate. As thus restricted, decedents’ estates come under the operation of two distinct sets of rules, which, though now usually embodied in statute form, do not depart in essential particulars from the common-law doctrines in which they originated. These rules are, first, that the real estate of a decedent shall descend to his heir, and, second, that his personal property shall pass to his personal representative for purposes of administration and distribution. This personal representative may or may not be a person entitled to share in the ultimate distribution of the property, and under some circumstances the duty of administration is undertaken by the state. In the early history of the law in England it devolved upon the church, the right of administering upon the estate of a decedent being vested in the bishop of the diocese in which he died, such administration, together with the probate of wills, constituting an important part of the ordinary jurisdiction of the ecclesiastical courts. This jurisdiction has now been assumed by the High Court of Justice in England. In the United States it is commonly exercised by local tribunals of the rank of county courts, known, variously, as surrogates’ courts, probate courts, orphans’ courts, and the like. See those titles; also DESCENT; DISTRIBUTION; HEIR, PERSONAL REPRESENTATIVE; EXECUTOR, ADMINISTRATION.

DECEIT. In law, a misrepresentation or other device or contrivance by which one man intentionally deceives another to the legal injury or damage of the latter. The deceit need not be accomplished by any spoken or written words or by any positive statement or representation; but the concealment of any fact or circumstance which the deceiver is under a legal obligation to disclose, or his mere silence concerning it when the circumstances are such as to put upon him an obligation to speak, amount to deceit as fully as if positive misrepresentation was made. But mere silence concerning matter which there is no obligation to disclose is not generally deceit, even though the party misled may be known to be acting upon a false idea as to those facts. Deceit involves as a necessary element the *intention* to deceive in a matter in which the deceived party has a right to know the truth and rely upon it. Without this intent a misrepresentation might amount to a legal mistake, but would not be a basis for an allegation of the tort of fraud.

If the party deceived be in a position such that by the exercise of due caution or diligence, or by duly taking advantage of matters open to his knowledge, he would not have been deceived, there is no legal deceit, even though his reason for failing to take reasonable care was due to his confidence in the honesty of the party by whom he is deceived. If, however, he is dissuaded from the exercise of his caution by the actions of the other party intended so to dissuade him, there is deceit. The misrepresentation or misleading must be in respect of matters material to the transaction concerned, and must

be relied upon to the deceived party’s prejudice in the same transaction in order to lay a basis for an action. Misrepresentations as to matters of law are not generally sufficient to lay a basis for an action, although the circumstances may be such as to make them so. Reckless statements, made without any regard to whether they are true or not, or false statements, made in the belief that they are true when the party making them is legally bound to know and state the true facts, are legally deceitful. But mere expressions of opinion, or of anticipation as to what will happen in the future, is not deceit.

Deceit is a necessary element of a fraud, and no exact or absolute definition or statement can be given of what is deceit, except in a general way, as above. See FRAUD.

DE CELLES, de sèl, ALFRED DUCLOS (1843–). A Canadian author. He was born at St. Laurent, P. Q., and was educated at Quebec Seminary and Laval University, where he graduated in 1867. He was called to the bar in 1873, but left law for journalism and successively edited three conservative newspapers, *Le Journal de Québec*, *La Minerve*, and *L’Opinion Publique*. In 1880–85 he was assistant librarian, and after 1885 librarian, of the Dominion Parliament. He was elected a fellow of the Royal Society of Canada, was appointed by the French government an officer of Public Instruction (1896), and a chevalier of the Legion of Honor (1903), and in 1907 was created C.M.G. His principal publications are: *La crise du régime parlementaire* (1888), *La conquête de la liberté en France et au Canada* (1890), *Les constitutions du Canada* (1890); *Les Etats Unis. origine, institutions, développement* (1896), crowned by the French Academy of Political and Moral Sciences; *Papineau, Cartier* (1905); *Cartier et son temps* (1907); *Lafontaine et son temps* (1907).

DECEMBER. See MONTH.

DECEMVIRI (Lat., board of ten men, from *decem*, ten + *vir*, man). The most famous body with this title were the 10 persons appointed at Rome (451 B.C.) to draw up a code of laws. The basis of their work was the information collected by three commissioners who were sent for that purpose to Greece (455–452). On the return of the commissioners a violent dispute arose between the patricians and the plebeians as to which of the orders should be intrusted with the revision of the laws. The dispute ended in favor of the patricians, and 10 patrician lawgivers were consequently appointed, to whom, moreover, the whole government of the state was intrusted during the year for which they were to hold office (451). The work of legislation was carried on with zeal and success, and the state was governed with prudence and moderation. Ten “Tables” of laws were adopted in 451. Their labors not being quite finished, a new body of decemviri was appointed, only one of whom, the notorious Appius Claudius Crassus (q.v.), had belonged to the previous commission. Two more “Tables” were adopted. In their magisterial and executive capacities, however, the new decemviri acted in the most tyrannical manner. In place of the fasces (q.v.) without the axe being carried only before the decemvir who presided for the day, as in the previous year, each decemvir was now attended by 12 lictors, who carried not only the rods, but the axe, which was the emblem of power over

life and death. When the term of their appointment expired, the decemviri refused either to resign or to allow successors to be appointed to them. At length the action of Appius Claudius in the matter of Virginia brought affairs to a climax. A popular insurrection broke forth, the decemviri were driven from their office, and the tribunes and other ordinary magistrates of the Republic were reappointed. The "Twelve Tables," however, remained in force. (See TWELVE TABLES, LAW OF THE.) Consult Mommsen, *History of Rome*, Eng. trans. by Dickson (New York, 1883), and Greenidge, *Roman Public Life* (London, 1901).

The *Decemviri Sacris Faciundis*, 'Commissioners for the Performance of Sacred Rites,' first appointed in 367 B.C., had the charge of the Sibylline Books (see SIBYL) and of the celebration of certain games in honor of Apollo and of the Secular Games (q.v.), which Augustus did most to make famous.

DECENNALIA. See DECENNIAL GAMES.

DECENNIAL GAMES (Lat. *Decennia* or *Decennalia*, nom. pl., from *decem*, ten + *annus*, year). The games celebrated in ancient Rome, every 10 years, to commemorate the nominal refusal of Augustus to be Emperor for life and his preference for reelection once in 10 years. They were maintained as a popular amusement until the last days of the Empire.

DECEPTION. See FRAUD; DECEIT.

DECEPTION ISLAND. One of the South Shetland Islands in the Antarctic Ocean, situated in lat. 62° 55' S. and long. 60° 35' W. It was formed from a volcano whose cone rises about 1800 feet above sea level. On the southeast side the cone wall is broken by an opening about 600 feet wide, through which the sea has flooded the crater, forming a lake harbor (called Port Foster) which is approximately circular, about 5 miles in diameter, and about 95 fathoms deep.

DE CESARE, dà chà'zà-rà, CARLO (1824-). An Italian political economist and legislator. He was born at Spinnazola, Province of Bari, and studied at Naples. He became Secretary General of the Neapolitan Finances in 1860 and of Agriculture, Industry, and Commerce in 1868. His works include: *Il mondo civile ed industriale nel XIX secolo* (1857); *Del potere temporale del Papa* (2d ed., 1861); *Il primo unitario italiano* (2d ed., 1861); *La Germania moderna* (2d ed., 1874).

DECHAMPS, de-shàn', ADOLPHE (1807-75). A Belgian statesman, born at Melle, East Flanders. He became Governor of the Province of Luxembourg in 1842, Minister of Public Works in 1843, and Minister of Foreign Affairs in 1845. He was the foremost promoter of railroad communication in Belgium and, in association with De Decker, was the founder of the *Revue de Bruxelles*, a Catholic organ which exerted a marked influence from 1837 to 1850. From 1847 to 1864 he was leader of the Catholic minority, when, after an attempt to organize a Liberal ministry, he retired from politics. He had considerable ability as a writer, and a thorough familiarity with the political conditions of his time, as evidenced by his works, which include: *La Second Empire* (1859); *L'Empire et l'Angleterre* (1860); *La France et l'Allemagne* (1865); *Le Prince de Bismarck et l'entrevue des trois empereurs* (1873).

DE CHAVANNES, PUVIS. See PUVIS DE CHAVANNES.

DECHEN, dà'ken, HEINRICH VON (1800-89). A German geologist and engineer, born in Berlin. He studied for some time at the university of that city, but soon devoted himself to practical mining, and subsequently held a number of important government offices. In 1834 he was made professor of mining engineering in Berlin and in 1841 director of mines at Bonn. Besides a number of valuable geological maps, Dechen's published works include: *Geognostische Umriss der Rheinlande zwischen Basel und Mainz* (2 vols., 1825); *Geognostische Beschreibung des Siebengebirges* (1852); *Die nutzbaren Mineralien und Gebirgsarten im Deutschen Reich, nebst einer physiographischen und geognostischen Uebersicht des Gebietes* (1873). He was also for many years editor of the *Archiv für Mineralogie, Geognosie, Bergbau- und Hüttenkunde*, and he published a geological map of Rhenish Prussia and Westphalia in 1855-82. His investigations of the geological structure of these regions formed his chief contribution to science.

DECHY, dà'kà, MORITZ VON (1851-). A Hungarian explorer. He was born in Budapest and was educated there and in Vienna, where he studied law, but he devoted himself to geography and mountaineering. In 1875 he was Hungarian commissioner to the International Geographical Congress in Paris. In 1878 with a Swiss guide he made an attempt to get to Tibet. In 1884, with Swiss and Tirol guides and a party of geologists and botanists, he made a remarkable tour of the Caucasus, which was followed by several other journeys in which his party made a thorough study of the mountains and climbed many high peaks. He wrote an elaborate book on the Caucasus in three volumes, which was published in German and in Hungarian (1905-07).

DECIDUOUS PLANTS (Lat. *deciduus*, falling down or off, from *de*, away + *cadere*, to fall). Plants which have organs that are shed periodically. The term "deciduous" is applied in particular to those trees and shrubs that shed their leaves at the approach of a season of cold or drought. See DURATION; FOREST; TREE.

DECIDUOUS TEETH. See TEETH.

DECIMA. See DESHIMA.

DECIMAL FRACTION. See FRACTION.

DECIMAL NOTATION. See NOTATION.

DECIMALS, REPEATING. See CIRCULATING DECIMALS.

DECIMAL SYSTEM (from Lat. *decimus*, tenth). A name applied to a system of numeration or to a system of measures such as weights, money, etc., in which the standard unit is divided into tenths, hundredths, etc., for the denominations below it, and multiplied by 10, 100, etc., for those above it. An excellent example is that of the international metric system of measures. The meter (approximately 39.37 inches in length) is the unit of linear measure and serves as a foundation for the measures of length, surface, volume, capacity, and weight. For the higher denominations the Greek *deka*, *hekto*, *kilo*, *myria*, are prefixed to signify the multiples 10, 100, 1000, 10,000, respectively. Thus, 1 dekameter = 10 meters; 1 hektometer = 100 meters, and so on. On the other hand, the Latin prefixes *deci*, *centi*, *milli*, are used to express divisions by 10, 100, etc., and thus furnish names for the lower denom-

inations; e.g., 1 decimeter = $\frac{1}{10}$ of a meter; 1 centimeter = $\frac{1}{100}$ of a meter. Similarly with money; the franc being the unit, a decime is the tenth part of a franc, and a centime the hundredth part. The monetary system of the United States of America, like that of nearly every civilized country except England, is decimal. Indeed, the numerical system in general use the world over is the most notable example of a decimal arrangement. It is based upon the 10 fingers used in primitive counting. See METRIC SYSTEM; NUMERALS; NOTATION; FRACTION.

DECIMATION (Fr. *décimation*, Lat. *decimatio*, from *decimare*, to decimate, from *decem*, ten). A punishment sometimes inflicted in the armies of ancient Rome. In instances where a crime had been committed by soldiers en masse, which would merit death in the individual, one-tenth of the whole number would be put to death. The individuals were selected by lot.

DE CISNEROS, de sis-ná'ró's, ELEONORA, COUNTESS (1878-). An American prima donna, born in New York City. She studied singing under Mme. Murio Celli in New York, and made her début at the Metropolitan Opera House in 1899. In the following year she was married to Count François G. de Cisneros. Between 1900 and 1906 she sang in more than 40 operatic rôles in Rome, Milan, Madrid, Lisbon, Vienna, St. Petersburg, London, and Rio de Janeiro. In 1907 she was Oscar Hammerstein's leading mezzo soprano at the Manhattan Opera House, New York.

DECIVS, dé'shl-ús, GAIUS MESSIVS QVINTVS TRAIANVS. A Roman Emperor (201-251 A.D.). He was a native of Pannonia, of Illyrian stock. He commanded the troops of the Emperor Philippus on the Danube. In 249, his soldiers in Mesia revolted and forced him, against his will, to proclaim himself Emperor and lead them into Italy. Philippus marched against him, but was slain in battle near Verona. In 250 Decius ordered all Christians to renounce their faith, and a cruel persecution ensued, notably at Rome, Carthage, Alexandria, Jerusalem, and Antioch. Fabianus, Bishop of Rome, was martyred on January 20, Cyprian, Bishop of Carthage, was forced to leave his see, and the bishops of Alexandria and Antioch perished in prison. The great Origen also was cast into prison and tortured in Caesarea. In the following year (251) Decius was called to Thrace to check a great invasion of the Goths, but was abandoned by his general, Trebonianus Gallus, who sought the throne for himself, and Decius, together with his son, perished in battle. Consult Gibbon, *Decline and Fall of the Roman Empire*, chap. x.

DECIUS MUS, PVBIVS. Father, son, and grandson, famous consuls and generals of the Roman Republic. The first commanded the Roman army in the Latin War (340 B.C.). Just before a battle was fought at Veseris, near Vesuvius, he was told in a vision that the army of one side and the general of the other were devoted to the gods of the dead. Accordingly Decius exposed himself to the attack of the enemy and lost his own life that the hostile army might be destroyed. The son found himself in a similar position at the battle of Sentinum (295 B.C.), when his heroic death gave the victory to the Romans over the Gauls, the Samnites, and the Etruscans. The grand-

son is said by Cicero, *Tusculanae Disputationes*, i, 89, to have sacrificed himself similarly at the battle of Asculum (279 B.C.), in the war with Pyrrhus, but the statement is challenged on good grounds.

DE CIVITATE DEI, dé siv't-tá'té dé'i. See AUGUSTINE, SAINT.

DECK. The flooring or platform formed by covering the deck beams with steel or planking. The term is sometimes used to express the space above a deck to the under side of the next higher deck. In old-type-rigged men-of-war the upper deck was called the *spar deck*; the next deck, the *gun deck*—if guns were carried on it—if not, it was called the *berth deck*; the next deck below the berth deck was the *orlop deck*. In old three-deckers (i.e., wooden line-of-battle ships carrying guns on three covered decks) these were called the *main*, *middle*, and *lower decks*. The *half deck*, in vessels having one or more covered gun decks, was that portion of the next deck below the spar deck extending from the mainmast to the cabin bulkheads. The *quarter-deck* was the part of the upper deck which was abaft the mainmast. These terms, *quarter* and *half*, were derived from the character of the decks in the days of high castle-like poops and forecastles. The *half deck* then extended half the length of the ship or less, the quarter-deck being still shorter. The after partial decks were connected with similar partial ones forward by gangways or narrow walks inside the ship's rail. As time went on, the forecastle and poop were reduced in height, and the partial decks became fewer in number, but the quarter-deck was only a partial one until after the beginning of the nineteenth century. For a long time the only partial decks above the upper, or spar, deck were those of the poop and topgallant forecastle, but the advent of the modern ship with its high central superstructure changed this together with the entire deck nomenclature. In ships of the United States navy the highest deck which extends the full length of the ship is called the *main deck*; a partial deck above this is called the *upper deck*; above this are the *bridge decks*, bridges, etc. The first deck below the main is called the *gun deck* if any of the main battery guns are mounted on it, the next deck below the gun deck is the *berth deck*; if there is no gun deck, it is the next one below the main deck; the *orlop deck* is the next below the berth deck; and then the *platform decks*. The *topgallant forecastle deck* is the deck over a raised, or topgallant, forecastle; the *poop deck* is the deck over the poop. The deck over superstructures is called the *superstructure deck*, *hurricane deck*, *boat deck*, *tee-deck*, etc., according to the character of the vessel. In passenger steamers the deck below the *boat deck* is frequently called the *shelter deck*. A *flush deck* is one that extends from bow to stern without a break, or a superstructure rising above it. A *protective deck* (fitted in men-of-war only) is one designed to protect the vitals of a ship from being struck by a shell or injured by fragments of one which bursts on board. If flat and laid over the upper edges of an armor belt, it is frequently called the *armor deck*. The ordinary type of protective decks consists of a flat portion amidships and sloping parts at the sides. The side slope may be a curve, a straight slope, or two short straight slopes; the inclination downward is at an angle

of 30° to 45° from the horizontal, and the lower edge of the deck where it meets the ship's side is several feet under water, in order that a projectile shall not get underneath it when the ship is rolling. Behind the belt armor of battleships sloping protective decks are now usually fitted to deflect any shell which may get through the belt. Both the flat and sloping parts of protective decks are armored, the latter much more heavily, reaching a thickness of six inches in large protected and armored cruisers.

DECK, THÉODORE (1823-91). A French ceramist, born at Gebweiler, Alsace. After three years' apprenticeship in a porcelain stove factory at Strassburg, he made an extensive tour through central Europe and subsequently became director of a factory of faience ware in Paris, where he conducted independent experiments in ceramics. His specialty was faience wainscoting and decorative architectural ceramics, but he also succeeded in reproducing not only some of the famous faience of the Renaissance but also imitations of Persian and Chinese ware, and created several colors for porcelain, such as the pale green, called *céladon*, and the turquoise blue, or *bleu de Deck*. During the last three years of his life he was director of the factory at Sèvres. He is the author of *La faience* (Paris, 1887). Consult his biography by Gerspach (ib., 1883).

DECKEN, AUGUSTE VON DER (1828-1908). A German novelist, known under the pen name of Auguste von der Elbe. She was born at Bleckede. Her novels, several of which enjoy great popularity, include: *Chronika eines fahrenden Schülers* (a continuation of Klemens Brentano's works of the same name), which has passed through seven editions, *Onkel Wilhelms Gäste* (1899); *Seckönigs Tochter* (1900); *Ehrgeiz* (1903); *Ein frisches Reis* (1905); *In Banden* (1907); *Eiken von Eikenheede* (1908).

DECKEN, KARL KLAUS VON DER (1833-65). A German African explorer, born at Kotzen, Brandenburg. He was for a time in the military service of Hanover and in 1861, in company with Thornton, an English geologist, undertook a journey of African exploration from Mombasa to the volcanic mountain of Kilimanjaro. In 1862 he ascended the mountain to a height of more than 14,000 feet and in the following year made an extended voyage about the African coast. His final explorations were begun in February, 1865. With a large and well-equipped expedition he attempted the ascent of the Juba River, but by reason of unnavigable rapids was forced to take the land, and on October 2 was murdered by the Somali at Berbera. Despite the hostility of the natives, most of his companions succeeded in reaching Zanzibar. The scientific collections of the expedition were presented to the University of Berlin, and its results were described by Kersten and others in *Karl Klaus von der Deckens Reisen in Ostafrika 1859-65* (4 vols., 1869-79).

DECKER, KARL VON (1784-1844). A Prussian general and author, born in Berlin. He took a leading part in the campaigns of 1813-15. He was a director in the Prussian Topographical Bureau and for many years a lecturer at the General Military Academy. By his incessant activity and his works he greatly stimulated the interest in, and the extension of, a scientific military education, and this he accomplished in the face of serious opposition.

His theories on artillery were attacked by his countrymen, but the principle of the offensive which he strongly advocated found effective illustration in the campaign of 1870-71. His works include *Der kleine Krieg* (1822; 4th ed., 1844) and *Taktik der drei Waffen* (2 parts, 1833-34; 3d ed., 1851-54).

DECKER, SIR MATTHEW (1679-1749). A political economist and free trader, born in Amsterdam, Holland. He went to London in 1702, was naturalized as an English subject in the following year, and having embarked in commerce attained the greatest success; received a baronetcy in 1716, and three years afterward took his seat in Parliament as member for Bishop's Castle. He sat in the House, however, only four years. His death took place March 18, 1749; the baronetcy then became extinct, and his daughters succeeded to his estates.

Decker was the reputed author of two pamphlets which appeared anonymously during his lifetime, and which ran through several editions and provoked much acrimonious controversy. In one he proposed to raise all the public supplies from one single tax, viz., a tax upon houses. According to Decker's calculation, there were then in England, exclusive of Wales, 1,200,000 houses, of these he meant to tax only one-half, counting off 500,000 as inhabited by the working classes and 100,000 as being uninhabited. By this means he proposed to raise an annual revenue of £6,000,000, which sum was £1,000,000 more than the expenses of the government of that day required. The surplus was to be applied as a sinking fund for the purpose of discharging debt. The same idea is found in the second essay, which discussed England's foreign trade and the means of improving it.

DECLAMATION (Fr. *declamation*, Lat. *declamatio*, declamation, from *declamare*, to declaim, from *de*, down + *clamare*, to shout). The art of speaking according to rules, whereby the sense of the words, as well as the feeling and sentiment, is naturally and characteristically represented. Recitation, therefore, whether spoken or sung, is subject to the laws of declamation, from which it derives its value and significance. Perfect declamation implies correctness of speech, distinctness and clearness of enunciation, and a well-toned voice. Declamation is therefore clearly of a musical nature. Declamation in music, however, differs from the declamation of speaking in that the singer must adhere to what the composer has written. The composer fixes the whole of the intonation, modulation, and phrasing, and also the *tempi* and expression, and not infrequently sacrifices the correctness of the declamation to the charm of some peculiar melodic phrase or pleasing rhythm or a vocal musical embellishment. The truth and beauty of correct musical declamation are always endangered by a translation of the original words into another language—a work which, with the greatest care and ability, it is in many cases almost impossible to accomplish word for word, or syllable for syllable, so as to fit accurately to the accent of the music. The masterworks of many great composers thus suffer much from careless translation. In earlier times attempts were made to establish declamation as a science. The ancients had a kind of note, or sign of intonation, which they placed over or under the words, possibly to decide whether the accent should be given by a high or by a low tone and thus to regulate the modula-

tion of the voice. That the theatrical declamation of the ancients resembled the musical recitative of the present day is generally admitted.

DE CLAPIERS, LUC. See VAUVENARGUES, MARQUIS DE.

DECLARATION (OF, *Lat. declaratio*, from *declarare*, to make clear, from *de* + *clarus*, clear). Under the common-law practice of England and the United States, the first pleading in an action corresponding to the bill in equity in chancery practice and the libel in admiralty. It must consist of a sufficient statement, in legal form, of all the material facts constituting the plaintiff's cause of action, together with a demand for relief. The facts alleged must be sufficient to give the plaintiff a right to recover if he establishes them; otherwise the defendant may demur and have the declaration dismissed. Originally, in England, the term was used only of the first pleading in a personal action, the first pleading in actions for the recovery of real property being called a *count*; but this distinction is no longer maintained either in England or in the United States.

The declaration is made up of the following general parts, viz., the *title*, being the name of the court; the *venue*, or county in which the cause of action is brought; the *commencement*, containing the names of the parties and the capacities in which they are joined in the action, together with a statement that the defendant has been summoned; the *body*, a statement of the facts constituting the cause of action; and a *conclusion*, or formal demand for relief at the end. The *body* must conform to the particular common form which is adapted to the nature of the action, but the other characteristics remain the same in all forms of action. The declaration is still in use in most of the United States, where the common-law system of pleading obtains, but under the reformed procedure in England it has been superseded by a pleading known as the *statement of claim* and in the "code States" of America (i.e., those which have adopted codes of civil procedure) by the *complaint* (q.v.). See BILL IN EQUITY; CODE; COMMON FORMS; FORMS OF ACTION; ORIGINAL WRIT; PLEADING.

In the criminal law of Scotland the statement made by the prisoner on the preliminary examination before the examining magistrates is known as the *declaration* of the accused. It is the duty of the magistrate to take this declaration immediately on the prisoner being brought before him. The magistrate must previously inform him that it is entirely at his own option to declare or not, but that, if he chooses to do so, the declaration may be used in evidence against him on his trial. The declaration ought to contain the name, age, and designation of the prisoner, the parish and county in which the crime was committed, and all similar particulars. When completed, it must be read over to the prisoner, who, if he is able to write, signs every page of it along with the magistrate. This practice of the Scottish committing magistrates is identical with that which obtains in England and America, the term "statement" being here employed for the prisoner's declaration. See ARRAIGNMENT; CONFESSION; and consult the statutes of the various States regulating the examination of persons under arrest for crime.

DECLARATION, DYING. A statement as to the cause of his death, made by a person who has been physically injured at the hands of

another, and who has given up all hope of recovery and who subsequently dies of such injury. Such statements are in English and American law permitted to be given in evidence as an exception to the rule excluding hearsay evidence from the consideration of the jury. The exception is based on the assumption that statements made by a dying person in the apprehension of death are as trustworthy as those made in open court under the sanction of an oath. To be admissible, however, dying declarations must have been made by the victim of the homicide and must relate to the circumstances of the crime; they can be used only on the trial of the person charged with the death of the declarant and are equally admissible whether favorable or unfavorable to the accused. As appears from the foregoing statement, dying declarations made by others than the victim of a homicide are inadmissible, either in civil or in criminal cases. Thus, a confession of guilt made by a person *in articulo mortis* will not be received in favor of a person accused of the crime. This narrow scope of the rule has been much criticized, but is almost universally maintained. Only such of the statements of the deceased as he could have testified to if he had lived to go on the witness stand are allowable. The substance of what was said by the dying person may be given by a witness if he cannot remember the exact words. As these statements must be repeated by one who was present and heard them, the character of the testifying witness enters into the weight of the evidence, and it is for the jury to determine whether he repeats what was said accurately. The jury may also give such credence to the deceased's story as in their judgment it deserves. It is for the court to rule in the first instance on the question whether the statement is admissible as a dying declaration. See EVIDENCE; HEARSAY RULE.

DECLARATION IN LIEU OF AN OATH. A solemn statement in court or before a judicial or legislative body, by a witness, that he will tell the whole truth in such testimony as he may be called upon to give in the matter pending. Any one who objects to taking an oath, for religious or other reasons, may, in nearly all jurisdictions to-day, thus declare or affirm that he will tell the truth, but usually an oath is administered unless the witness objects. This practice was adopted generally because at common law no witness who did not believe in a Supreme Being and who, therefore, had no sense of the obligation of an oath from that standpoint, was allowed to testify, which rule excluded much valuable testimony. Violation of such declaration or affirmation is legal perjury, and the witness may be punished as if he had taken an oath. See AFFIRMATION; OATH.

DECLARATION OF INDEPENDENCE, AMERICAN. A document proclaiming the independence of the 13 English Colonies in America, and finally agreed upon by the Continental Congress, July 4, 1776. Early in 1776 several delegates in Congress were directed by their constituencies to vote for independence. Such a vote would be, in some particulars, no more than a recognition of the existing state of affairs, for already there existed in several provinces a complete independence of England so far as the administrative system was concerned. As a result of advice given by the Continental Congress, Massachusetts, New Hampshire, and South Carolina had early established commonwealth

organizations entirely regardless of any connection with England. This organization of commonwealth governments on a permanent basis was strongly urged by John Adams, largely as a result of whose work the Continental Congress passed the resolutions of May 10 and 15, 1776, recommending to all the Colonies the formation of independent governments. This action was generally indorsed; and gradually the various States placed themselves on record as favoring the step which had now indeed become virtually inevitable—the declaration of their absolute independence. On June 7, 1776, Richard Henry Lee moved in Congress that “these united Colonies are and of right ought to be free and independent States, that they are absolved from all allegiance to the British Crown, and that all political connection between them and the State of Great Britain is and ought to be totally dissolved.” This motion was seconded by John Adams, but action thereon was deferred until July 1, and the resolution was passed on the following day. Two committees were appointed (on June 10)—one to prepare a declaration, and the other to draw up a plan of confederation. On the Declaration committee were Jefferson, Franklin, John Adams, Roger Sherman, and R. R. Livingston. They reported June 28, but action was delayed for several days. When the Declaration finally came up for consideration, it was passed unanimously on July 4, by the delegates of 12 Colonies, those representing New York not voting, since they had not as yet been authorized to support the movement for independence. The document was signed on the same day by John Hancock as President of the Congress. On July 9, however, a New York convention formally pledged that State to support the Declaration. The document was engrossed on parchment in accordance with a resolution passed by Congress on July 19, and on August 2 was signed by the 53 members then present. Congress directed that copies be sent “to the Assemblies, Conventions, and Committees or Councils of Safety, and to the several commanding officers of the continental troops; that it be proclaimed in each of the United States and at the head of the army.” Subsequently Matthew Thornton, Elbridge Gerry, and Thomas McKean also affixed their signatures. The Declaration of Independence was drafted by Thomas Jefferson and was but very slightly changed from his copy. The document itself was assigned for safekeeping to the Department of State upon the organization of the national government. It was deposited in the Patent Office in 1841, when that office was a bureau in the Department of State; was returned to the Department of State in 1877; and in 1894, owing to the rapid fading of the text and the deterioration of the parchment, was withdrawn from exhibition and was carefully put away out of the light and air. A facsimile was made in 1823, by order of John Quincy Adams, then Secretary of State, for the original signers and their families, and it is from a copy struck from the copperplate then made that the reproduction here given was obtained.

The text of the Declaration is as follows:

**THE UNANIMOUS DECLARATION OF THE THIRTEEN
UNITED STATES OF AMERICA**

When, in the course of human events, it becomes necessary for one people to dissolve the

political bands which have connected them with another, and to assume, among the powers of the earth, the separate and equal station to which the laws of nature and of nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.

We hold these truths to be self-evident—that all men are created equal; that they are endowed by their Creator with certain unalienable rights; that among these are life, liberty, and the pursuit of happiness. That to secure these rights, governments are instituted among men, deriving their just powers from the consent of the governed; that whenever any form of government becomes destructive of these ends, it is the right of the people to alter or to abolish it, and to institute a new government, laying its foundation on such principles, and organizing its powers in such form, as to them shall seem most likely to effect their safety and happiness. Prudence, indeed, will dictate that governments long established should not be changed for light and transient causes; and, accordingly, all experience hath shown, that mankind are more disposed to suffer, while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed. But when a long train of abuses and usurpations, pursuing invariably the same object, evinces a design to reduce them under absolute despotism, it is their right, it is their duty, to throw off such government, and to provide new guards for their future security. Such has been the patient sufferance of these Colonies, and such is now the necessity which constrains them to alter their former systems of government. The history of the present King of Great Britain is a history of repeated injuries and usurpations, all having, in direct object, the establishment of an absolute tyranny over these States. To prove this, let facts be submitted to a candid world:

He has refused his assent to laws the most wholesome and necessary for the public good.

He has forbidden his Governors to pass laws of immediate and pressing importance, unless suspended in their operation till his assent should be obtained; and, when so suspended, he has utterly neglected to attend to them.

He has refused to pass other laws for the accommodation of large districts of people, unless those people would relinquish the right of representation in the Legislature; a right inestimable to them, and formidable to tyrants only.

He has called together legislative bodies at places unusual, uncomfortable, and distant from the depository of their public records, for the sole purpose of fatiguing them into compliance with his measures.

He has dissolved Representative Houses repeatedly for opposing with manly firmness his invasions on the rights of the people.

He has refused, for a long time after such dissolutions, to cause others to be elected; whereby the legislative powers, incapable of annihilation, have returned to the people at large for their exercise; the State remaining, in the meantime, exposed to all the danger of invasion from without and convulsions within.

He has endeavored to prevent the population of these States; for that purpose obstructing the laws for the naturalization of foreigners; refusing to pass others to encourage their migration hither, and raising the conditions of new appropriations of lands.

He has obstructed the administration of justice by refusing his assent to laws for establishing judiciary powers.

He has made judges dependent on his will alone, for the tenure of their offices, and the amount and payment of their salaries.

He has erected a multitude of new offices, and sent hither swarms of officers to harass our people and eat out their substance.

He has kept among us, in times of peace, standing armies, without the consent of our legislatures.

He has affected to render the military independent of, and superior to, the civil power.

He has combined, with others, to subject us to a jurisdiction foreign to our constitution, and unacknowledged by our laws, giving his assent to their acts of pretended legislation:

For quartering large bodies of armed troops among us:

For protecting them, by a mock trial, from punishment, for any murders which they should commit on the inhabitants of these States.

For cutting off our trade with all parts of the world:

For imposing taxes on us without our consent.

For depriving us, in many cases, of the benefits of trial by jury:

For transporting us beyond seas to be tried for pretended offenses:

For abolishing the free system of English laws in a neighboring province, establishing therein an arbitrary government, and enlarging its boundaries, so as to render it at once an example and fit instrument for introducing the same absolute rule into these Colonies.

For taking away our charters, abolishing our most valuable laws, and altering, fundamentally, the powers of our governments:

For suspending our own legislatures, and declaring themselves invested with power to legislate for us in all cases whatsoever.

He has abdicated government here, by declaring us out of his protection, and waging war against us.

He has plundered our seas, ravaged our coasts, burnt our towns, and destroyed the lives of our people.

He is, at this time, transporting large armies of foreign mercenaries to complete the works of death, desolation, and tyranny, already begun, with circumstances of cruelty and perfidy scarcely paralleled in the most barbarous ages, and totally unworthy the head of a civilized nation.

He has constrained our fellow-citizens, taken captive on the high seas, to bear arms against their country, to become the executioners of their friends and brethren, or to fall themselves by their hands.

He has excited domestic insurrections among us, and has endeavored to bring on the inhabitants of our frontiers, the merciless Indian savages, whose known rule of warfare is an undistinguished destruction of all ages, sexes, and conditions.

In every stage of these oppressions we have petitioned for redress in the most humble terms; our repeated petitions have been answered only by repeated injury. A prince whose character is thus marked by every act which may define a tyrant, is unfit to be the ruler of a free people.

Nor have we been wanting in attention to our British brethren. We have warned them from time to time of attempts made by their legis-

lature to extend an unwarrantable jurisdiction over us. We have reminded them of the circumstances of our emigration and settlement here. We have appealed to their native justice and magnanimity, and we have conjured them, by the ties of our common kindred, to disavow these usurpations, which would inevitably interrupt our connection and correspondence. They, too, have been deaf to the voice of justice and consanguinity. We must, therefore, acquiesce in the necessity which denounces our separation, and hold them, as we hold the rest of mankind, enemies in war, in peace, friends.

We, therefore, the Representatives of the United States of America, in General Congress assembled, appealing to the Supreme Judge of the world for the rectitude of our intentions, do, in the name and by the authority of the good people of these Colonies, solemnly publish and declare, That these United Colonies are, and of right ought to be, *free and independent States*; that they are absolved from all allegiance to the British Crown, and that all political connection between them and the State of Great Britain is, and ought to be, totally dissolved, and that, as *free and independent States*, they have full power to levy war, conclude peace, contract alliances, establish commerce, and to do all other acts and things which *independent States* may of right do. And, for the support of this Declaration, with a firm reliance on the protection of Divine Providence, we mutually pledge to each other, our lives, our fortunes, and our sacred honor.

The 56 signers of the Declaration were as follows: Roger Sherman, Samuel Huntington, William Williams, and Oliver Wolcott, of Connecticut; Cesar Rodney, George Read, and Thomas McKean, of Delaware; Button Gwinnett, Lyman Hall, and George Walton, of Georgia; Samuel Chase, William Paca, Thomas Stone, and Charles Carroll of Carrollton, of Maryland; John Hancock, Samuel Adams, John Adams, Robert Treat Paine, and Elbridge Gerry, of Massachusetts; Josiah Bartlett, William Whipple, and Matthew Thornton, of New Hampshire; Richard Stockton, John Witherspoon, Francis Hopkinson, John Hart, and Abraham Clark, of New Jersey; William Floyd, Philip Livingston, Francis Lewis, and Lewis Morris, of New York; William Hooper, Joseph Hewes, and John Penn, of North Carolina; Robert Morris, Benjamin Rush, Benjamin Franklin, John Morton, George Clymer, James Smith, George Taylor, James Wilson, and George Ross, of Pennsylvania; Stephen Hopkins and William Ellery, of Rhode Island; Edward Rutledge, Thomas Heyward, Jr., Thomas Lynch, Jr., and Arthur Middleton, of South Carolina, and George Wythe, Richard Henry Lee, Thomas Jefferson, Benjamin Harrison, Thomas Nelson, Jr., Francis Lightfoot Lee, and Carter Braxton, of Virginia.

Bibliography. Much useful material may be found in Emmet, *History of the Inception and Drafting of the Declaration of Independence; with a Collection of Autographs of the Signers, and Other Documents* (New York, 1876), which, however, is not generally accessible. Consult also: *Rise of the Republic of the United States* (Boston, 1872); Greene, *Historical View of the American Revolution* (ib., 1865); Ellis, "The Sentiment of Independence: Its Growth and Consummation," in Winsor, *Narrative and Critical History of America*, vol. vi (ib., 1888); Tyler, *Literary History of the American Revolution*, vol. i (New York, 1897); Randall, *Life*

of Thomas Jefferson (ib., 1858); Bancroft, *History of the United States*, vol. iv (last ed., ib., 1891); Stillé, "Pennsylvania and the Declaration of Independence," in the *Pennsylvania Magazine of History and Biography*, vol. xiii (Philadelphia, 1889); Hays, "A Contribution to the Bibliography of the Declaration of Independence," in the *Proceedings of the American Philosophical Society*, vol. xxxix (Philadelphia, 1900); a chapter, "The Authentication of the Declaration of Independence," in Chamberlain, *John Adams, with Other Essays and Addresses* (Boston, 1898); Friedenwald, "The Declaration of Independence," in the *International Monthly*, vol. iv (Burlington, Vt., 1901); Dana, "The Declaration of Independence," in the *Harvard Law Review*, vol. xiii (Cambridge, 1900); Hazelton, *Declaration of Independence: Its History* (New York, 1905). For biographies of the signers, consult: Sanderson, *Biography of the Signers of the Declaration of Independence* (9 vols., Philadelphia, 1823-27); Brotherhead, *Book of the Signers* (ib., 1861, new ed., 1875); Lossing, *Biographical Sketches of the Signers of the American Declaration of Independence* (New York, 1860); Dwight, *Signers of the Declaration of Independence* (last ed., ib., 1895). See also the biographical notices of the individual signers.

DECLARATION OF INDEPENDENCE. MECKLENBURG. See MECKLENBURG DECLARATION OF INDEPENDENCE.

DECLARATION OF INDULGENCE. This name is applied to several acts of the last two Stuart kings, but particularly to the proclamation of James II, in 1687, suspending the operation of the penal statutes directed against the Roman Catholics and the Protestant Nonconformists, and of all acts imposing a test as a qualification for holding lay or ecclesiastical office. In this way James hoped to gain, in favor of his Catholic policy, the adherence of the Protestant dissenters, many of whom were suffering severe persecution under those laws. Several hundred addresses of thanks were presented to the King, but the majority of the dissenting clergy would not accept toleration on such terms. The great leaders, Baxter, Howe, and Bunyan, declined the indulgence at the price of a breach of the law and the encouragement of Romanism.

The clergy generally refused to read the proclamation in their churches, as commanded by a royal order of May, 1688. The seven bishops, with Archbishop Sancroft at their head, signed a firm but moderate petition to the King, refusing to publish a declaration which they knew to be illegal. James commanded the ecclesiastical commissioners to deprive these bishops of their sees, but this was going too far, even for that body; and on the suggestion of Jeffreys, a prosecution before the King's Bench for seditious libel was substituted. So threatening was the popular indignation that the accused prelates were acquitted, although the jury was packed and the judges were mere tools of the crown. The declaration cost James the allegiance of the Anglican church and precipitated the revolution of 1688. Consult: Howell, *State Trials*, vol. xii (London, 1809-28); D'Oyly, *Life of William Sancroft* (ib., 1840); Macaulay, *History of England*, vol. ii (ib., 1849). See SANCROFT.

DECLARATION OF LONDON. See LONDON, DECLARATION OF.

DECLARATION OF PARIS. An agree-

ment defining the rules of maritime law, to be applied in time of war, signed by the plenipotentiaries of Great Britain, Austria, France, Prussia, Russia, Sardinia, and Turkey, at Paris, April 16, 1856, where they had met in convention to settle the questions involved in the Crimean War, just closed. England had always claimed and had exercised the right to seize an enemy's goods on the high seas, though conveyed in a neutral vessel, which included the right to stop and search neutral merchant vessels for this purpose. The exercise of this right had aroused against England the Northern Maritime League of 1800 and was condemned generally by the civilized world. Nothing short of absolute command of the seas made it safe for a single power to maintain a practice which threatened in moments of danger to turn the whole body of neutral states into enemies. Besides, while it was profitable for England to seize an enemy's goods in neutral ships when she was at war, it reacted upon England when she remained at peace during hostilities between other states. Likewise, while her privateers might inflict severe injuries upon an enemy's commerce, her own commerce in time of war offered a rich field for hostile privateers. So, in return for the abolition of privateering, Great Britain consented to a rule permitting the products of a belligerent state to find a market in time of war.

The following rules were adopted by the convention: 1. Privateering is, and remains, abolished. 2. The neutral flag covers enemy's goods, with the exception of contraband of war. 3. Neutral goods, with the exception of contraband of war, are not liable to capture under the enemy's flag. 4. Blockades, in order to be binding, must be effective, i.e., maintained by a force sufficient really to prevent access to the coast of the enemy. This declaration was subsequently accepted by the civilized nations, with the exception of the United States, Spain, Mexico, and several South American republics. The United States urged the substitution of a more advanced provision, excepting from capture all private property, even of citizens of belligerents, either by privateers or national vessels. This was the situation at the opening of the Civil War. On the issuance by the Confederate President, Jefferson Davis, of letters to privateers, Secretary of State Seward addressed a note to the Powers, requesting to be allowed to accede to the Declaration of Paris without modification. Great Britain and France, who had recognized the South as belligerents and were anxious not to invalidate the letters of marque issued by the Confederate government, stipulated that the accession of the United States should not "have any bearing, direct or indirect, on the internal differences now prevailing." As this placed no restriction upon Confederate privateers, the negotiations were dropped. In the war between the United States and Spain, in 1898, both belligerents formally announced their intention to adhere to the principles of the Declaration. It may be said that the second, third, and fourth principles are a recognized part of the body of international law. The question of privateering has thus far been regarded rather as one of national policy. With the development of modern navies, however, it has become of minor significance. Consult the authorities referred to under MARITIME LAW; INTERNATIONAL LAW.

DECLARATION OF RIGHTS. See RIGHTS, DECLARATION AND BILL OF.

DECLARATION OF ST. PETERSBURG. See ST. PETERSBURG, DECLARATION OF.

DECLARATION OF WAR. A formal announcement of hostile intentions by one state to another. It is a survival of the feudal custom of sending heralds to give the enemy warning of impending hostilities. The doctrine that notice must be given an enemy before entering upon war has never grown into an obligation, and since the middle of the eighteenth century the practice has so largely decreased that it may be concluded that a formal declaration is not required by morality or international law. The later custom of publication by a belligerent in its own territory, at the outbreak of war, of a manifesto discussing the questions at issue and justifying its position, which should be communicated to neutrals, never has assumed the weight of an obligation, though useful both to subjects of the state and to those of neutrals.

Under conditions of modern intercourse a state can never be taken by surprise. A period of negotiation is followed by an ultimatum in the form of a demand, refusal of which involves war. Thus, the United States demanded of Spain her withdrawal from Cuba in April, 1898, on condition of war. A later act of declaration was passed by Congress on April 25, fixing the date of hostilities as April 21. This was important, as determining the date for legal purposes. On Jan. 13, 1904, the Japanese minister delivered to the Russian government a note containing proposals relative to the matters in dispute between the two Powers, a prompt reply to which was requested, the implication being that, in the event of unreasonable delay, Japan would take hostile action. Formal declarations of war were issued by both governments on February 10, two days after the commencement of hostilities. When not fixed by direct notice, war is held to date from the first act of hostilities by either party. The United States began the War of 1812 by invading Canada and seizing British vessels in port, and in 1854 the British fleet entered the Black Sea to compel the Russian fleet to return to Sebastopol before the ambassadors had withdrawn. On the other hand, the French chargé d'affaires handed a formal notice to Bismarck in 1870, and Russia declared war upon Turkey in 1877 by a formal dispatch.

DECLARATOR, ACTION OF. A form of action peculiar to the law of Scotland, the object of which is judicially to ascertain a fact, leaving its legal consequences to follow as a matter of course. The declaratory conclusions of such actions are generally followed by petitory or possessory actions, for the purpose of giving effect to the right declared. A substantial interest on the part of the pursuer, or plaintiff, must be shown in all cases, as it is not competent to ask the court to declare a mere abstract fact or right. The existence of this special form of action has contributed to diffuse in Scotland a false view as to the nature of actions and judicial proceedings generally.

DECLÉ, da'kl, LIONEL (1859-1907). A French explorer, born in Saint-Quentin, France. Between 1881 and 1885 he traveled through most of Asia and in America, in 1891-94 he crossed Africa from the Cape to Zanzibar by the way of Uganda, and he then served as Russian correspondent for the *Pall Mall Gazette*, the editor of which, H. J. C. Cust, he accompanied (1896-

97) through East and South Africa. He organized the native transports in the Madagascar expedition in 1895, and during the Spanish-American War was correspondent for the London *Daily Telegraph*. For that paper also he headed an expedition from Cape Town to Cairo (1899-1901). He wrote: *Three Years in Savage Africa* (1898), with an introduction by Henry M. Stanley; *Trooper 3809* (1899), an attack upon French army management; *The New Russia* (1906).

DECLENSION (Fr. *déclinaison*, Lat. *declinatio*, from *declinare*, to bend, from *de*, down + *clinare*, Gk. *κλίνειν*, *klínein*, to bend, Lith. *szlyti*, to incline, Skt. *śṛi*, to lean). A grammatical term applied to the system of modifications called *cases*, which nouns, pronouns, and adjectives undergo in many languages. How the word "declension" (Lat. *declinatio*, a declining, or leaning away) and "case" (Lat. *casus*, a fall) came to be applied to this species of inflection has never been made altogether clear. The relations in which one thing stands to other things may be expressed in either of two ways. Some languages make use of separate words, called prepositions, or postpositions; in others the relations are expressed by changes in the termination of the name of the thing. Thus, in Latin, *reg* being the root or crude form of the word for "king," *regis*, or *rex*, is the word in the nominative case, signifying "a king" as subject or agent; *regis*, in the genitive case, "of a king"; *regi*, in the dative, "to a king"; etc. An adjective joined to a noun usually takes a corresponding change. The number of cases is very different in different languages. The further we go back in the history of the Indo-European languages, the richer do we generally find them in these modifications. Sanskrit had eight cases, old Slavonic seven, Latin six, and Greek five. The names of the Latin cases, which are often used also in regard to the English language, are the nominative, which names the subject or actor; the genitive, expressing the source whence something proceeds, or to which it belongs—it is sometimes called the adjective case; the dative, that to which something is given, or for which it is done; the accusative, the object towards which an action is directed—it completes the meaning of a transitive verb; the vocative, the person addressed or called; and the ablative, that from which something is taken. The Greek has no ablative case. The Sanskrit, in addition to the Latin cases, has an instrumental and a locative case. The grammar of the inflective languages is complicated by the circumstance that all nouns do not form their cases in the same way. This makes it necessary to distribute nouns into various classes, called *declensions*. In Latin, as many as five declensions are usually given. (See INFLECTION.) As we descend, the case endings become rubbed off, as it were, and prepositions are used in their stead. The languages descended from the Latin (French, Italian, etc.) have lost all the cases of nouns and adjectives. The Teutonic languages in their early periods had cases almost as numerous and perplexing as those of the Latin. German is still to a great extent incumbered with them. Modern English has only one case in nouns different from the nominative, viz., the genitive, or possessive. (See NOUN.) The declension of pronouns (q.v.) has been more persistent than that of nouns and adjectives. Languages of the agglutinative

TABLE OF MAGNETIC DECLINATIONS AND ANNUAL CHANGES IN THE UNITED STATES FOR JANUARY 1, 1910

STATE OR TERRITORY	Station	Approximate latitude	Approximate longitude	Mag. decl. Jan. 1, 1910	An. change Jan. 1, 1910
Alabama	Montgomery	32° 22'	86° 18'	3° 45' E	0.7 decr.
Alabama (East)	Holbrook	34° 55'	110° 10'	14° 05' E	4.3 incr.
Alabama (West)	Prescott	34° 34'	112° 30'	4° 45' E	0.7 " "
Arkansas	Little Rock	34° 47'	92° 18'	6° 49' E	1.4 " "
Calif. (South)	Los Angeles	34° 04'	118° 19'	15° 35' E	5.0 " "
Calif. (Middle)	San Jose	37° 18'	121° 52'	18° 32' E	4.5 " "
Calif. (North)	Redding	40° 36'	122° 24'	19° 32' E	4.5 " "
Colorado (East)	Pueblo	38° 14'	104° 38'	13° 19' E	3.0 " "
Colorado (West)	Glenwood	39° 32'	107° 20'	16° 10' E	3.7 " "
Connecticut	Hartford	41° 45'	72° 40'	11° 11' W	5.8 " "
Delaware	Dover	39° 09'	75° 31'	7° 13' W	4.8 " "
Dist. Columbia	Washington	38° 55'	77° 02'	4° 51' W	4.5 " "
Florida (East)	Jacksonville	30° 20'	81° 39'	1° 05' E	2.0 decr.
Florida (West)	Marianna	30° 47'	85° 13'	3° 37' E	0.8 " "
Florida (South)	Tampa	27° 58'	82° 28'	3° 00' E	0.8 " "
Georgia	Macon	32° 51'	83° 37'	1° 52' E	2.0 " "
Idaho (East)	Pocatello	42° 51'	112° 26'	18° 20' E	4.0 incr.
Idaho (West)	Boise	43° 37'	116° 12'	19° 31' E	4.5 " "
Illinois	Bloomington	40° 31'	88° 59'	3° 25' E	0.8 decr.
Indiana	Indianapolis	39° 47'	85° 12'	1° 08' E	1.8 " "
Iowa	Des Moines	41° 30'	93° 36'	7° 07' E	1.0 incr.
Kansas (East)	Emporia	38° 25'	96° 12'	10° 08' E	1.8 " "
Kansas (West)	Ness City	38° 28'	90° 54'	11° 27' E	2.4 " "
Kentucky (East)	Lexington	38° 04'	84° 30'	0° 19' E	2.0 decr.
Kentucky (West)	Princeton	37° 07'	87° 53'	3° 36' E	1.0 " "
Louisiana	Alexandria	31° 21'	92° 23'	6° 12' E	1.1 incr.
Maine (N. E.)	Eastport	44° 15'	67° 00'	20° 01' W	6.0 " "
Maine (S. W.)	Portland	43° 39'	70° 17'	15° 13' W	6.0 " "
Maryland	Baltimore	39° 18'	76° 35'	6° 15' W	4.5 " "
Mass. (East)	Boston	42° 20'	71° 01'	13° 21' W	6.0 " "
Mass. (West)	Pittsfield	42° 27'	73° 17'	11° 42' W	5.8 " "
Michigan (N.)	Marquette	46° 34'	87° 22' E	2° 15' E	2.4 decr.
Michigan (S.)	Lansing	42° 44'	84° 32'	0° 27' W	1.6 incr.
Minnesota (N.)	Northome	47° 53'	94° 17'	8° 03' E	1.0 " "
Minnesota (S.)	Mankato	44° 11'	93° 59'	9° 00' E	1.2 " "
Mississippi	Jackson	32° 20'	90° 11'	6° 08' E	1.0 " "
Missouri	Sedalia	38° 43'	93° 14'	7° 46' E	1.2 " "
Montana (East)	Fort Union	46° 15'	106° 39'	18° 17' E	3.7 " "
Montana (West)	Helena	46° 37'	112° 02'	20° 02' E	3.7 " "
Nebraska (East)	Hastings	40° 37'	98° 24'	10° 28' E	2.0 " "
Nebraska (West)	Allamore	42° 06'	102° 51'	14° 31' E	2.6 " "
Nevada (East)	Elko	40° 51'	115° 40'	18° 27' E	4.6 " "
Nevada (West)	Hawthorne	38° 32'	118° 38'	17° 58' E	5.0 " "
New Hampshire	Hannover	43° 47'	72° 17'	13° 16' W	6.0 " "
New Jersey	Trenton	40° 14'	74° 48'	8° 33' W	5.2 " "
New Mexico (E.)	Santa Rosa	34° 56'	104° 41'	12° 29' E	3.6 " "
New Mexico (W.)	Laguna	35° 03'	107° 24'	13° 36' E	4.0 " "
New York (E.)	Albany	42° 40'	73° 45'	11° 31' W	5.6 " "
New York (W.)	Elmira	42° 07'	76° 50'	8° 12' W	4.5 " "
N. Carolina (E.)	Newbern	35° 07'	77° 03'	3° 25' W	3.4 " "
N. Carolina (W.)	Salisbury	35° 40'	80° 30'	0° 47' W	2.8 " "
N. Dakota (E.)	Jamestown	46° 54'	98° 43'	12° 24' E	1.8 " "
N. Dakota (W.)	Dickinson	46° 53'	102° 46'	16° 43' E	2.4 " "
Ohio	Columbus	39° 59'	83° 01'	1° 10' W	2.8 " "
Okahoma (E.)	Oklmulgee	35° 38'	95° 55'	8° 55' E	2.0 " "
Okahoma (W.)	End	36° 24'	97° 55'	10° 06' E	2.6 " "
Oregon (East)	Sumpter	44° 45'	118° 13'	21° 07' E	4.6 " "
Oregon (West)	Detroit	44° 43'	122° 08'	21° 33' E	4.8 " "
Pennsylvania (E.)	Philadelphia	39° 57'	75° 12'	8° 07' W	5.0 " "
Pennsylvania (W.)	Altoona	40° 31'	78° 23'	5° 45' W	4.0 " "
Rhode Island	Newport	41° 39'	71° 20'	12° 40' W	6.0 " "
South Carolina	Columbia	34° 09'	81° 02'	0° 12' W	2.6 " "
South Dakota (E.)	Huron	44° 21'	98° 14'	11° 28' E	1.8 " "
South Dakota (W.)	Rapid City	44° 05'	103° 12'	15° 27' E	2.5 " "
Tennessee (East)	Chattanooga	35° 15'	85° 18'	1° 12' E	2.0 decr.
Tennessee (West)	Huntingdon	36° 00'	88° 23'	4° 18' E	0.5 " "
Texas (East)	Houston	29° 47'	95° 21'	0° 47' E	2.5 incr.
Texas (Middle)	San Antonio	29° 29'	98° 32'	9° 09' E	3.0 " "
Texas (West)	Pecos	31° 26'	103° 33'	10° 50' E	3.6 " "
Texas (N.W.)	Floydada	33° 59'	101° 15'	10° 44' E	3.1 " "
Utah	Salt Lake	40° 46'	111° 54'	17° 03' E	4.2 " "
Vermont	Rutland	43° 37'	72° 58'	12° 57' W	6.0 " "
Virginia (East)	Richmond	37° 25'	76° 09'	2° 53' W	3.4 " "
Virginia (West)	Lynchburg	37° 39'	77° 28'	4° 13' W	4.0 " "
Washington (E.)	Wilson Creek	47° 26'	119° 00'	23° 00' E	4.5 " "
Washington (W.)	Seattle	47° 40'	122° 18'	23° 40' E	5.0 " "
West Virginia	Charleston	38° 21'	81° 38'	2° 39' W	3.4 " "
Wisconsin	Madison	43° 04'	89° 25'	4° 51' E	1.0 decr.
Wyoming (East)	Douglas	42° 44'	105° 22'	15° 33' E	3.2 incr.
Wyoming (West)	Green River	41° 32'	109° 28'	17° 08' E	3.6 " "

The use of the tables may best be explained by a few examples. (1) What was the change in declination at Mobile, Ala., between Aug. 25, 1805, and June 15, 1911? In the table for Alabama the values for 1800 and 1810 are 5° 24' E. and 5° 39' E., showing an average annual increase of 1.5. Hence the value for Aug. 25, 1805, would be 5° 24' E. + (1/5 × 5.6) = 5° 32' E. Similarly the table gives for 1910 the value 2° 45' E. with an annual decrease of 0.7. Hence the value for June 15, 1911, would be 2° 45' E. - (0.7 × 1.5) = 2° 44' E. Therefore the north end of the compass needle pointed 2° 49' less to the east on June 15, 1911, than it did on Aug. 25, 1805. (2) A rectangular piece of land at Santa Barbara, Cal., was surveyed by compass in May, 1822, and the bearings recorded as follows: N. 20° 15' W., N. 75° 30' E., S. 18° 45' E., and S. 78° 00' W. What bearings should be used in order to retrace the lines in March, 1912? From the table for southern California the value for May 1822, is 13° 16' E. and for March, 1912, 15° 46' E., showing a change of 2° 30' in the interval. The desired bearings are, therefore, N. 22° 45' W., N. 73° 00' E., S. 21° 15' E., and S. 75° 30' W.

order have, in general, a great abundance of cases. In Finnish nouns have 15 cases, if by case is understood an inflectional form produced by joining on a suffix which takes the place of a preposition. Thus, *karhu*, a bear; *karhun*, of a bear; *karhuna*, as a bear; *karhutta*, without bear; *karhussa*, in the bear; *karhusta*, out of the bear; etc. In the Magyar 20 cases may be reckoned; and the languages of the North American Indians are richer still—perhaps we should say more embarrassed. Semitic speech originally had at least four cases, but only a few traces of them remain in the modern Semitic tongues. In Basque each noun may belong to two different declensions—*definite* and *indefinite*—each of which has 13 different case forms. What case endings and other inflectional terminations were in their origin, as well as the comparative merits of the highly inflected and the analytic languages, will be considered under INFLECTION.

DECLINATION (Lat. *declinatio*, a bending aside, from *de*, away, from + **clinare*, to incline, bend), in astronomy. If a great circle be drawn through the pole of the heavens and any star, the declination of the star is its angular distance from the celestial equator, measured along this circle. The declination is positive or negative according as the star is to the north or south of the equator, or the position of the star relative to the equator may be indicated by the letter N. or S., as the case may be. The place of a point in the heavens is determined by its right ascension (see ASCENSION, RIGHT) and declination, just as a point in the earth's surface is determined by its latitude and longitude, the right ascension corresponding to the longitude, and the declination to the latitude.

DECLINATION. In magnetism, the angle which the direction pointed out by a compass needle makes with the true meridian or astronomical north-and-south line; the marines and the surveyor call this angle the "variation of the compass." The declination, which may be either to the east or west of the true north and south, varies from time to time and from point to point on the earth's surface, as do the other magnetic phenomena which are discussed under TERRESTRIAL MAGNETISM, and under COMPASS. At some places the magnetic and astronomical meridians may coincide, while at others the difference is most marked. The table on page 587, compiled from a report on *The Distribution of the Magnetic Declination in the United States for January 1, 1910*, of the United States Coast and Geodetic Survey, gives the declination or variation for January, 1910, with the amount of annual change at that date, for a number of points throughout the United States:

See COMPASS; DIP CIRCLE. TERRESTRIAL MAGNETISM. Under the latter will be found charts showing the isogonic, the isoclinic, and other lines. Consult the Reports, Bulletins, and Charts published from time to time by the United States Coast and Geodetic Survey and the Division of Terrestrial Magnetism of the Carnegie Institution of Washington.

DECLINATION NEEDLE. See DECLINOMETER.

DECLINE AND FALL OF THE ROMAN EMPIRE. A celebrated work by Edward Gibbon (1776-88), the first real attempt at scientific history in English. It contains an account of the growth of Christianity and subjected the

author to fierce attacks by the leading churchmen of his day.

DECLINOMETER. An instrument for determining the magnetic declination. Two things are essential—the means of ascertaining the astronomical meridian and a magnetic needle to show the magnetic meridian. The most accurate method of determining declination is with the magnetometer (q.v.) and theodolite. This instrument is employed by the Division of Terrestrial Magnetism of the United States Coast and Geodetic Survey, and the apparatus and results are described in its reports. Various types of magnetic instruments have received thorough test and application both on land and sea by the Division of Terrestrial Magnetism of the Carnegie Institution of Washington, to whose various publications reference may be made. The declination of the needle may be also ascertained approximately by the dipping needle. The ordinary surveyor's compass, which may be used by making allowance for declination, is a declination compass. See COMPASS; ENGINEERING INSTRUMENTS; TERRESTRIAL MAGNETISM; MAGNETOMETER.

DECOCTION (Lat. *decoctio*, a boiling down, decoction, from *de*, down + *coquere*, to cook, boil). The term applied in pharmacy to a solution procured by boiling an organic drug in water. One hundred cubic centimeters of a decoction usually contain five grams of drug.

DECOMPOSITION (Fr. *décomposition*, from Lat. *de*, down, away + *componere*, to put together, join, unite). A term employed to signify the breaking up of compounds into simpler compounds or altogether into their chemical elements. The number of substances that are being decomposed is, as a rule, smaller, of course, than the number of substances produced by the decomposition. However, in the class of chemical transformations known as "double decompositions," the number remains unchanged. Thus, AB and CD, two compounds, made up each of two elements, may, on being brought into contact, undergo decomposition, the result of which would be again only two compounds, AC and BD. Examples of this class of reactions are very numerous in chemistry. But the term "decomposition," unqualified, is generally applied, as stated above, to transformations involving an increase in the number of substances. Such decompositions are usually caused by the influence of some physical factor, such as heat, electricity, etc. Heat is one of the most common of decomposing agents: mercuric oxide (HgO), when heated, breaks up into the invisible gas oxygen (O₂) and the liquid metal mercury (Hg). Limestone (CaCO₃) decomposes into quicklime (oxide of calcium, CaO) and carbon dioxide (CO₂): coal and wood decompose into a great variety of useful materials, including coke or charcoal, illuminating gas, and tar. Electricity (the galvanic current) is a potent decomposing agent, under its influence water (H₂O) is broken up into oxygen (O₂) and hydrogen (H₂), and metallic salts are broken up into their constituent metals and acids, electrolytic processes being consequently much used both for scientific and industrial purposes. Light effects many decompositions, as of the silver salts used in photography, of nitric acid, of hydrogen peroxide, and a number of other substances. Percussion explodes nitroglycerin, and even a touch causes iodide of nitrogen to decompose violently. Ferments (minute vege-

table and animal organisms) cause many decompositions, such as the breaking up of dextrose ($C_6H_{12}O_6$), in the presence of yeast, into alcohol (C_2H_5OH) and carbon dioxide (CO_2), and the common decompositions known as putrefaction and decay.

It has been customary to class a number of decompositions separately as *dissociations*. For example, when sal ammoniac (ammonium chloride) containing at least a trace of moisture is heated in a closed vessel, it partly breaks up into ammonia gas and hydrochloric acid, and partly remains unchanged. On the other hand, if equal volumes of ammonia gas and hydrochloric acid (with a trace of moisture again) were confined in a closed vessel at the same temperature as in the first experiment, the two substances would partly combine chemically into ammonium chloride and partly remain in a state of mechanical mixture. Quantitative investigation would show that the ratio of the combined to the uncombined products is the same in both experiments, i.e., the final state is the same, whether we start with sal ammoniac or with ammonia and hydrochloric acid. The decomposition of sal ammoniac is classed as a chemical *dissociation*, because, as we have just seen, it is *reversible*. Dissociation might thus be defined as reversible decomposition. It must, however, be borne in mind that the principles of thermodynamics—scientific principles of the most indubitable reliability—teach that reversibility is by no means an attribute of certain reactions only; that *all* reactions must be reversible, or else perpetual motion would result. In other words, while a given reaction may proceed almost to completion and therefore appear to be nonreversible, in reality no reaction can proceed *entirely* to completion. But then the customary distinction between dissociation and decomposition proper can have but little real significance. An excellent illustration of this conclusion is presented by the case of ammonia. At high temperatures, and especially under the influence of electric sparks, ammonia rapidly breaks up into its elements, hydrogen and nitrogen. The process appears to be complete and until a few years ago was often mentioned as a typical case of decomposition proper as distinguished from dissociation. Then Haber and his collaborators, encouraged by the thermodynamic principle that no reaction can be entirely complete or nonreversible, succeeded in showing experimentally that hydrogen and nitrogen do recombine to form ammonia, that the decomposition of ammonia is as much a dissociation as, e.g., the dissociation of sal ammoniac, and at the present time ammonia is actually made on an industrial scale by the direct synthesis of hydrogen and nitrogen. See AMMONIA.

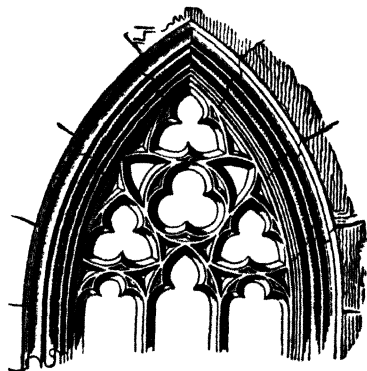
Nevertheless, the term "dissociation" is a convenient one and may well be retained in the current language of chemistry, with the understanding that it denotes decomposition that is obviously or readily reversible. See DISSOCIATION; REACTION.

DE CONSOLATIONE PHILOSOPHIE, de kōn'sō-lā'shi-ō'nē fil'ō-sō'fī-ē (Lat., on the consolation of philosophy). A philosophical work interspersed with verse by Boëthius, written about 525, in prison. Alfred the Great translated it into Anglo-Saxon, and Chaucer translated it into English before 1382. Caxton printed it in 1480. Its influence in spreading

Platonic thought in the Middle Ages is almost incalculable. It was one of Dante's great thought sources.

DECORAH. A city and the county seat of Winneshiek Co., Iowa, 110 miles northwest of Dubuque, on the upper Iowa River, and on the Chicago, Milwaukee, and St. Paul and the Chicago, Rock Island, and Pacific railroads (Map: Iowa, F 1). It is the seat of Luther College and Valder College and contains a hospital. The city has stock-raising, farming, and milling interests and manufactures of valves, wagons, patent medicines, toilet preparations, metal boats, etc. Settled in 1849, Decorah was incorporated as a town in 1857 and was chartered as a city in 1871. Its government is administered under a general law by a mayor elected biennially and a city council. The city owns and operates its water works. Pop., 1900, 3246, 1910, 3592.

DECORATED STYLE OF GOTHIC ARCHITECTURE. The second of the three period styles into which the history of English Gothic architecture is usually divided. This system of style division and nomenclature was invented by Thomas Rickman and has been in use ever since his time; but it is unscientific,



GEOMETRIC TRACERY.

for style development cannot be sliced into precise period styles. The name designates the style of the century approximately covered by the reigns of the first three Edwards (1280-1380), during which the vigorous simplicity and Norman elements of the Early English style developed into the more elaborate and ornate architecture which characterizes the churches and cathedrals of the fourteenth century, although exemplified also in some of the chapter houses of the end of the thirteenth. It is distinguished primarily by its bar tracery of geometric patterns with cusping, by the fineness and overrichness of its moldings and shaft clusterings, by its naturalistic carving and the progressively increasing richness and complexity of its vault ribbing. Sharpe divides the style and period into two, the Geometric and the Curvilinear, named from their tracery forms. The interior of Lichfield Cathedral, the presbytery and octagon of Ely, the choir of Wells, are among the prominent examples of the Decorated style, which passed into the Perpendicular (q.v.), the most distinctively English phase of Gothic architecture. See ARCHITECTURE, EARLY ENGLISH; GOTHIC ARCHITECTURE.

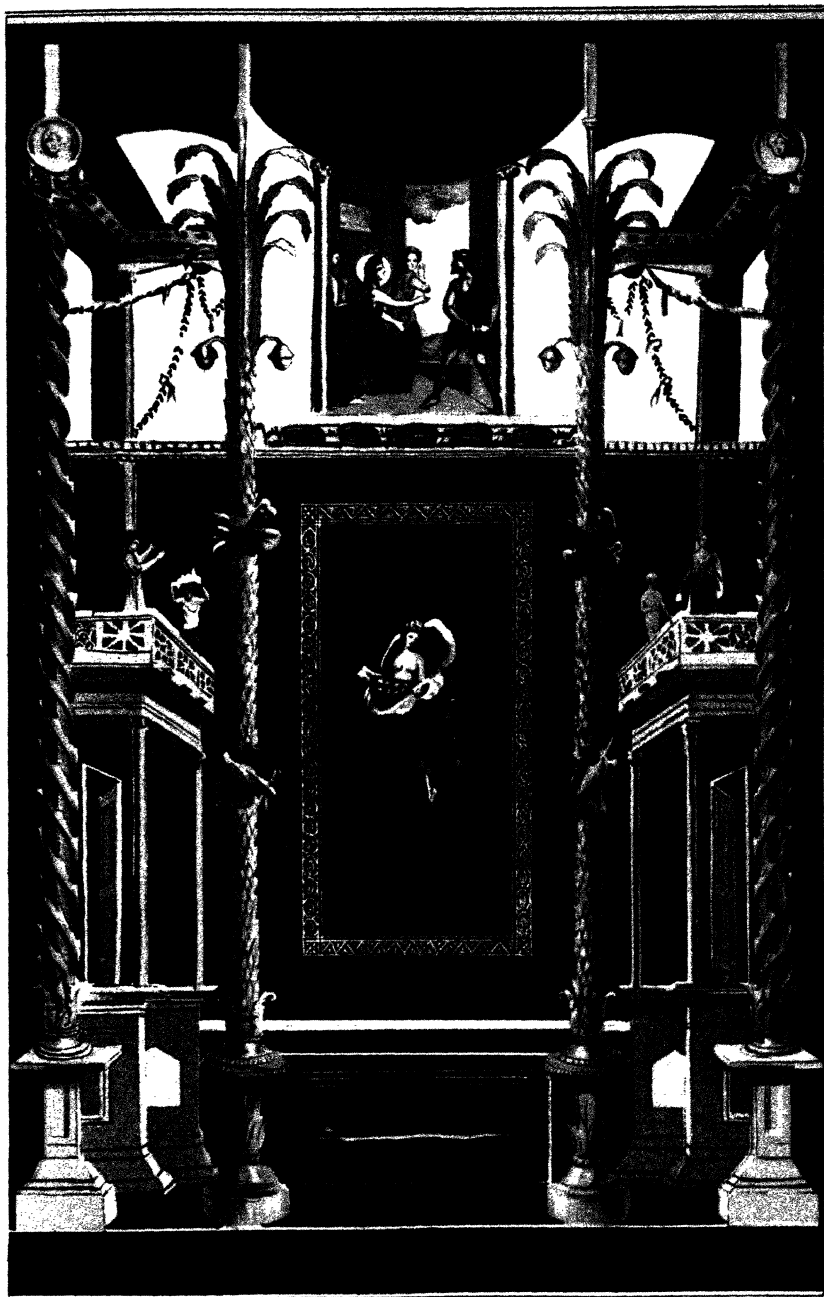
POMPEIAN MURAL DECORATION



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POMPEIAN MURAL DECORATION



Pierpont Morgan. Of the objects displayed in the three rooms devoted to American Colonial, a majority came from the Bolles collection, presented to the museum by Mrs. Russell Sage.

Of what decorative art is, these four museums form an excellent definition. They illustrate not only the arts that are primarily decorative, but also the arts of painting and sculpture as employed decoratively.

The classification of the collections of the Musée des Arts Décoratifs is particularly worthy of attention for its simplicity and clarity. The two main divisions are the Decoration of Man and the Decoration of Building. The Decoration of Man is subdivided into (1) costume; (2) arms and armor; (3) instruments and tools; (4) means of instruction (books, engravings, photographs, etc.).

The Decoration of Buildings is divided into Exterior Decoration and Interior Decoration. Exterior Decoration is subdivided into (1) architecture; (2) sculpture applied to architecture; (3) painting applied to architecture, including mosaic and stained glass.

Of Interior Decoration the main subdivisions are (1) painting; (2) woodwork; (3) furniture; (4) textiles; (5) pottery; (6) metal work; (7) miscellaneous objects.

Of painting, stained glass, mosaic, sculpture, and tapestry, etc., as used in the decoration of buildings, there are two main types: (1) pictorial; (2) ornamental.

To the first class belongs mural painting (q.v.), that not only decorates the surface of walls, ceilings, and vaults, but also presents allegorical, historical, religious, or other scenes. In ancient Egypt walls and columns, internal and external, were covered with pictures deeply incised by the chisel and richly painted. The Romans covered the walls of their chambers, courts, and banquet rooms with painted decorations in which pictures of mythological beings and of familiar scenes were mingled with landscape and fantastic architecture. (See POMPEII.) The Byzantine artists adorned the walls and apses of their churches with highly decorative pictures on a gold ground, executed often in glass mosaic; in these the drawing and coloring, forsaking the pursuit of natural realism, were controlled by purely decorative considerations. The greatest schools of decorative painting were those which grew up in Italy in the fourteenth and sixteenth centuries—the earlier having its chief centre in Florence, with Giotto as its greatest master; the second reaching its highest development in Rome under Raphael and Michelangelo, and a little later in Venice, where Titian, Tintoretto, and Paolo Veronese attained an extraordinary pitch of sensuous splendor of color. But no decorative painter of any age ever equaled the sublimity of conception and grandeur of execution of Michelangelo's compositions for the vault of the Sistine Chapel in the Vatican at Rome.

The work of the sculptor has in all ages been considered an essential adjunct to noble architecture. In Egypt he cooperated with the painter in producing the pictures mentioned above and carved the effigies of the King and the god Osiris against the pylons and piers of the temples. It was, however, the Greeks who lifted decorative sculpture out of the trammels of sacerdotal tradition and exalted it into one of the highest and noblest of all forms of expression of religious and national aspirations.

The friezes, metopes, and pediment groups of their temples were not merely unequaled as sculpture, but superb as decorations for the architecture to which they were affixed. In creating them the sculptor, while he sought to embody the poetic and patriotic ideals of the Greek mythology which inspired him, was at the same time solicitous so to dispose the masses of light and shade, so to combine and arrange every outline and detail of the composition, that they should harmonize with the dominant lines of the architecture and produce that pleasing effect of harmony, rhythm, balance, and contrast which is the chief source of an enjoyment of all decorative design. The Romans made far less use of pictorial sculpture in architecture than the Greeks, but developed a remarkable system of ornamental carving in relief, in which symbolic figures, grotesque, and conventional foliage were blended in a manner to enrich with a wonderful play of light and shade the friezes, pilasters, and panels to which they were applied. In the Middle Ages the builders of abbeys and cathedrals in Europe, especially in France, adorned their buildings with sculpture, both of serious figures and of gargoyles, everywhere pervaded with religious meaning, but marvelously adapted to the exigencies of the architecture.

Beautiful as are many of the French fourteenth-century statues of saints, martyrs, and apostles, and the ranges of seated angel choirs in the cathedral porches, considered as pictorial sculpture, they are perfect only when seen in the architectural setting for which they were designed, whose lines they emphasize and whose beauty they enhance. The French and Italians may be said to vie with each other for the supremacy in sculpture during the Renaissance; but while the French produced no one to equal Michelangelo in pure sculpture, the Italians never equaled Jean Goujon in the perfect mastery of decorative effect in figure sculpture applied to architecture.

However, the decoration of architecture and furniture with nonpictorial painting and sculpture is quite as important and vastly more necessary. The capitals and moldings of ancient Greek temples are reproduced over and over again in our modern buildings. The painting of the average house is apt to interest the owner more than any other part of the decoration except perhaps the wall paper. Of furniture, carving is the most usual ornament.

Magazines in English that print many interesting articles about the different decorative arts are the *Burlington Magazine* (London); *International Studio* (New York); *Arts and Decoration* (ib.); *Connoisseur* (London). There are also important decorative magazines in France and Germany. But on the history of decorative art, as a whole, there is no adequate book, and most of the histories of the individual decorative arts are unsatisfactory. Consult: Ward, *Historic Ornament: A Treatise on Decorative Art and Architectural Ornament* (London, 1897); Speltz, *Styles of Ornament* (trans., Berlin, 1906); Molinier, *Les arts appliqués à l'industrie* (6 vols., Paris, 1896-1902); the guide books and descriptive pamphlets of the four decorative art museums mentioned above. See ORNAMENT; ARCHITECTURE; INTERIOR DECORATION; FURNITURE; TAPESTRY; STAINED GLASS; PAINTING; MURAL DECORATION; SCULPTURE; POTTERY; JEWELRY; LIGHT-

ING; MUSICAL INSTRUMENTS; COSTUME; ARMOR; TEXTILE; CARPETS AND RUGS.

DECORATIVE NEEDLEWORK. See **EMBROIDERY**.

DE CORONA (Lat., On the Crown). The most famous speech of Demosthenes and the most perfect specimen of the world's oratory. It was delivered in 330 B.C. as a reply to the famous speech of Eschines against Ctesiphon, who had secured the passage of a law authorizing the crowning of Demosthenes for his services to the state.

DECORT, FRANS. See **COET, FRANS DE**.

DE COSTA, BENJAMIN FRANKLIN (1831-1904). An American clergyman and historian. He was born in Charlestown, Mass., graduated at the Concord (N. H.) Biblical Institute in 1856, and was rector at North Adams, Mass., from 1857 to 1858, and at Newton Lower Falls from 1858 to 1860. He was chaplain in the Federal army from 1861 to 1863, when he settled in New York. Here he was editor successively of the *Christian Times*, the *Episcopalian*, and the *Magazine of American History*. In 1884 he founded the American White Cross Society, of which he was president until 1899, and afterward helped organize the Church Temperance Society. He was rector of the church of St. John the Evangelist in New York from 1863 to 1899, when he became a Roman Catholic. He contributed to Winsor's *Narrative and Critical History* and published valuable monographs and essays on early American history and on local history, including: *The Pre-Columbian Discovery of America by the Northmen* (1868); *Narrative of Events at Lake George* (1868); *The Northmen in Maine* (1870); *Columbus and the Geographers of the North* (1872); *The Fight at Diamond Island* (1872); *Huaveatha: The Story of the Iroquois Sage in Prose and Verse* (1873); *The Lost City of New England* (1877); *Verrazano the Explorer* (1880); *Cabo de Baros, or the Place of Cape Cod in the Old Cartology* (1891); *Cabo de Arenas, or the Place of Sandy Hook in the Old Cartology* (1885); *Whither Goest Thou?* (1902). He wrote a novel, *The Rector of Roxburgh* (1873), under the pseudonym of William Hickling; and he edited White's *Memoirs of the Protestant Episcopal Church* (1881).

DE COSTER, CHARLES THÉODORE HENRI (1827-70). A Belgian author, born in Munich. For many years he occupied the chair of French literature at the military academy in Brussels. His work has been compared to that of Rabelais and Montaigne. His prose epic, *La légende de Tiel Uylenspiegel* (1867), is a masterly description of Flemish life during the reign of Philip II and the days of the Inquisition. His works also include: *Légendes flamandes* (1857; 2d ed., 1861); *Contes brabançons* (1861); *Voyage de nocé* (1872). Consult Potvin, *Histoire de lettres en Belgique* (1882).

DE COVERLEY, SIR ROGER. See **COVERLEY**.

DECOY (from *de*, Fr., Lat. *de*, down + *cog*, OF. *cog*, quiet, from Lat. *quietus*, still, from *quies*, repose). A contrivance for luring game into a snare or within the range of a weapon. In England for centuries decoys have been contrivances for capturing as well as alluring ducks, by driving them into tunnel nets, or by catching them in a cage built on a platform on the water, into which they were enticed by feeding. To-day both these especial methods are

obsolete; but the principle of the tunnel net remains in the decoys built in the fresh-water pools near the coast, which attract the birds on their arrival from over sea. At the corners of the pool curved ditches are cut and covered with wide arched hoop nets, gradually diminishing in size. The wild ducks are enticed to the mouth of the tunnel by live, tame ducks, which retreat up the tunnel, the wild birds following to the end of the pipe, which by this time is on land, after which they are all easily caught.

In America the decoys are painted wooden, cork, or canvas imitations of ducks (or other birds, as the case may be) anchored on the water in a lifelike way, within range of a blind or boat concealed in the reeds. Waterfowl and shore birds often stoof well to such decoys.

Consult: Grinnell, *American Duck Shooting* (New York, 1901); Folkard, *Wild Fowling* (London, 1859-64-75-97); Payne-Gallwey, *The Book of Duck Decoys* (ib., 1886).

DECREE (Lat. *decretum*, judgment, from *decernere*, to separate one thing from another, to decide). In the civil law, an Imperial judgment in causes brought before the Emperor on appeal, or otherwise. These judgments were promulgated as law, and the principles enunciated in them were binding on all the courts of the Empire. See **CIVIL LAW**; **CORPUS JURIS**; **DECRETAL**.

In English and American law, the judgment, or order, of a court of equity, the term "judgment" being properly restricted to the adjudication of a matter by the courts of common law. The difference between a judgment and a decree is fundamental and springs out of the radical difference in the character of the jurisdiction exercised by the two classes of tribunals. The function of the law court is merely to decide the bare question in controversy between the litigating parties, awarding an unconditional judgment to one or the other of them. The court of equity, on the other hand, undertakes to do substantial justice between the parties as to the whole matter submitted by them, and it may make such decree, or order, as justice may require, without being confined to the award or denial of the particular remedy sought by the complainant. Accordingly it may, before the final adjudication of the case, grant an "interlocutory" decree, which may or may not become the "final" decree of the court, or it may issue a conditional order, which shall become absolute or void, according as the condition is or is not complied with.

A decree nisi ('unless') is a conditional order, to become absolute unless, before the date fixed therein, good cause shall be shown to the court for vacating it. A decree for a temporary injunction, if drawn to become permanent, unless cause to the contrary be shown, is of this character. The phrase is not in common use in the United States, however, and in England it has come to be appropriated to a particular case in which a decree nisi is commonly employed, viz., in decrees for divorce not to take effect for a probationary period of six months or more, during which time any person may show cause why the decree should be vacated, and the parties reinstated in their conjugal rights.

In jurisdictions in which the law and equity systems have been merged, or in which they are administered by the same tribunals, the

term "judgment" is often employed in a comprehensive sense to include decree; and when the law permits both legal and equitable remedies to be afforded in the same action, the judgment rendered may be both a judgment and a decree. See DIVORCE; CHANCERY; EQUITY; JUDGMENT; and the authorities there referred to.

DECRESCENDO, *Ital. pron. dā'krā-shēn'dō* (It., decreasing). In music, the reverse of crescendo (q.v.), viz., a gradual diminishing of the sound. Like the crescendo, it is also sometimes combined with a slight ritardando, especially in descending passages. It is frequently marked thus, — .

DECRETAL (ML. *decretalis*, from Lat. *decretum*, a decree, from *decernere*, to decide). Generally, an authoritative order or decree; more specifically in ecclesiology, a letter or decision of the popes, determining some question of ecclesiastical law referred to them. For detailed classification of various collections of these decretals, see CANON LAW; and for a famous collection, now universally admitted to be largely forged, PSEUDO-ISIDORIAN DECRETALS.

DECRETALISTS. Commentators on the *Decretum*, or the Decretals. See CANON LAW.

DECRETUM OF GRATIAN. See CANON LAW.

DECUMATES AGRI, dēk'ō-mā'tēz ā'grī (Lat., tithe lands). A term applied by the Romans to their possessions north of the upper Danube and east of the Rhine, corresponding in large part to modern Baden and Württemberg. This district was guarded by the famous *limes*, or line of fortifications, which was begun by Domitian and finished by his successors and served as a bulwark against the Germans. The name would seem to signify tithe lands and to imply that at some time settlers had been allowed to occupy these lands in return for the payment of a tenth of all produce won from them, but we have no evidence to show that this was actually the case. Another view derives the name from that of a hypothetical town, *Decuma* or *Ad Decuman* (*Lapidem*). Consult Furneaux, in his edition of Tacitus' *Germania*, note on chap. xxix (Oxford, 1894).

DECURION (Lat. *decurio*, from *decuria*, company of ten, from *decem*, ten). The chief of a body of 10 men. This name was applied especially, in the Roman cavalry service, to the commander of a troop of 10 (afterward more) horsemen. In the free municipalities of Italy and in the provinces the chief citizens were often called *decuriones*; they corresponded to the senators at Rome. They had extensive powers of control over the magistrates, sometimes heard appeals from judicial sentences passed by the magistrates, and enjoyed certain special privileges. Consult: Greenidge, *Roman Public Life* (London, 1901); Friedländer-Waters, *Town Life in Ancient Italy* (Boston, 1902); Reid, *The Municipalities of the Roman Empire* (Cambridge, 1913).

DECUSSATION (Lat. *decussatio*, an intersecting of two lines crosswise, from *decussis*, the number 10, X, on account of its shape). In anatomy, the crossing of nervous filaments. Certain fibres of the anterior pyramids and lateral columns of the medulla oblongata are thus crossed freely from side to side, so that disease on one side of the brain often leads to paralysis on the other side of the body.

DEDEAGATCH, dā'dā-gā'ch'. A seaport

town of Bulgaria, on the Aegean Sea, northwest of the mouth of the Maritza. Its harbor is small, but its trade is considerable (Map: Balkan Peninsula, E 4). Dedeagatch has supplanted Enos (q.v.) as the port for the Maritza valley. It is connected by rail with Constantinople, Burgas, and Saloniki, and has steam communication with Greece. Pop., about 9000. For over four centuries the town belonged to Turkey, but in 1913, as a result of the Balkan War (q.v.), it was ceded to Bulgaria.

DEDHAM, ded'hām. A town, including three villages, and the county seat of Norfolk Co., Mass., 10 miles southwest of Boston, on the Charles River, and on the New York, New Haven, and Hartford Railroad (Map: Massachusetts, E 3). It is principally a residential suburb of Boston, but has manufactures of cotton and woolen goods, carpets, handkerchiefs, and pottery. The town contains the county courthouse, jail, and house of correction, a memorial hall, public library, and an Historical Society building. Water power is obtained from Mother Brook, a canal connecting the Charles and Neponset Rivers, built in 1641. The government is administered by town meetings. Dedham was settled in 1636 and was called Contentment. It was incorporated as a town under its present name on September 10 of that year. The first free school in America supported by a general tax of the people was established here in 1645. Dedham is the mother town of a large number of other towns in Norfolk County. Pop., 1900, 7457; 1910, 9284; 1914 (est.), 10,063. Consult Mann, *Historical Annals of Dedham from 1635 to 1877* (Dedham, 1847), and Erastus Worthington, *History of Dedham from September, 1635, to May, 1827* (1827). Eight volumes of town records (1635-1890) have been published (Dedham, 1886-94).

DEDICATION (Lat. *dedicatio*, from *dedicare*, to dedicate, from *de*, down + *dicare*, to say). In literature, the address of a book, or any literary work, to a particular person; *vide* Shakespeare's note to the Right Honorable Henry Wriothesley prefaced to *Venus and Adonis*. The custom, practiced by the ancients—*vide* Horace and Vergil—was adopted by the modern nations. In the seventeenth and eighteenth centuries books were usually dedicated to a patron, whose influence was sought by the author. They are now dedicated to relatives and friends, or, if learned, to scholars to whom the authors are indebted. An elaborately laudatory dedication is Tennyson's poem to the memory of Prince Albert, prefixed to the *Idylls of the King*. For models of the lighter form, see the volumes of the *Spectator*. Stevenson was particularly graceful in his inscriptions. The fulsome epistle of former times has been cut down to a brief formula, and many books are without dedications.

DEDICATION FEAST (Heb. *chanukkah*, Gk. τὰ ἐκκαινα, *ta enkaenia*, from *ἐκ, en*, in + *καίος, kaios*, new, Lat. *encenia*). An annual festival among the Jews, which originated in the Maccabean period. On the 25th of December, 168 B.C., the Yahwe temple in Jerusalem was dedicated to the worship of Zeus Olympius by order of Antiochus IV Epiphanes, the ruler of the land. An altar to Zeus was set up on the altar of burnt offerings. This smaller altar is called an "abomination of desolation" in 1 Mace. i. 54, 59, which is a translation of *shikkuz shomem* in Dan. xi. 31; xii. 11. Originally the "Baal of Heaven" may have been intended by

this phrase. According to 2 Macc. vi. 2, the sanctuary was called after Zeus Olympius; and it has been thought that a statue of this god was placed upon the altar. When Judas Macabaeus recovered Jerusalem in 165 B.C., he purged the temple, removed the pagan altar, and put up a new one. The temple was then rededicated to Yahwe with festivities that lasted eight days. According to 1 Macc. iv. 52-54, it was on the 25th of Chislev (December) that the dedication took place, on "the same day the heathen had profaned it"; the Greek manuscripts in 1 Macc. i. 54 give the 15th of Chislev as the day when the pagan altar was set up, but here also the Syriac Codex Ambrosianus has the 25th, which seems to have been the original text. It is indeed highly probable that both events took place on the 25th, a day that may have been kept by both nations as a celebration of the winter solstice. This is further suggested by the manner in which the dedication feast has since been kept. Josephus (*Ant.*, xii, 7, 7) calls it "the feast of lights," and the custom of placing lights at the entrance of synagogues and private houses is mentioned in Talmudic literature. The observation of the feast in memory of the deliverance of Jerusalem is enjoined upon the Egyptian Jews in the letters prefixed to 2 Maccabees. Psalm xxx was the dedication hymn. Consult: Marti, *Das Buch Daniel* (1901); Benzinger, *Hebraische Archäologie* (2d ed., 1907); Bouché-Leclercq, *Histoire des Séleucides* (1913). Oesterley, "1 Maccabees," in Charles, O. T. *Apocrypha and Pseudepigrapha* (1913); Wellhausen, *Israelitische und jüdische Geschichte* (7th ed., 1914).

DED'LOCK, LADY. The mother of Esther Summerson in Dickens's *Bleak House*.

DEDUCTION (Lat. *deducere*, to draw out).

A process of reasoning from the general to a particular subsumed under it; its counterpart is induction (q.v.). Formal logic regards deduction and induction as opposed operations. Deduction is the application of a principle, assumed to be accepted, to some specific case, and a judgment, on this case, controlled by this accepted principle. For instance, when heat is recognized as a mode of motion, the judgment that therefore the laws of motion prevail in the phenomena of heat is a deduction. Induction is the recognition of a group of phenomena as involving a general principle. For instance, when the study of the phenomena of heat leads to the recognition and judgment that they are regulated by the laws of motion, an induction is made. The difference is one of point of departure in the reasoning process. If we begin with the knowledge of the law and apply this law to a particular instance, we deduce; if we begin with particular instances and from them arrive at a knowledge of the law, we induce. The explicit analysis and statement of the presuppositions implied in a process of deduction is a syllogism (q.v.), whose major premise is the assertion of the law or principle; the minor premise is the assertion that the case in point comes under the law; the conclusion is the judgment on this case in accordance with the law. But our thought movements are usually very elliptical, when compared with the expression that formal logic gives to them in syllogisms, and it is pedantry to demand that in our ordinary thinking we should cultivate the syllogistic habit. The value of the syllogism is found in the fact that we have therein

in explicit detail the various interrelated judgments to which we commit ourselves in the deduction and can thus examine and criticize them in the open. The syllogism is an instrument of criticism and is not to be regarded as "good form" in reasoning which is to be adopted on all occasions.

Transcendental deduction is a technical term in Kant's (q.v.) philosophy, designating the justification which a theory of knowledge gives to a claim a priori conceptions make of being applicable to any possible object of knowledge.

See *Logic* (where a bibliography is given); *SYLLOGISM*.

DEE (Lat. *Deva*, OWelsh, *Dubr-Duin*, water of the goddess, Ir. *dé*, goddess, Corn. *dwy*, Bret. *doe*; connected with Lat. *deus*, Lith. *devas*, OPruss. *deuvas*, Skt. *dēva*, god). A river in England and Wales, draining parts of the counties of Merioneth, Denbigh, Flint, and Shropshire, and the west of Chester (Map: Wales, C 3). It ends in a tidal estuary of the Irish Sea, 13 miles long, and 3 to 6 miles broad. From the city of Chester, which it almost encircles, the river flows to the estuary in a straight artificial channel which is the only navigable portion. Its course is 80 miles long, and among its chief tributaries are the Treveryn and Alwyn. Canals connect the Dee with the rivers of central England. The ancient Britons held its waters sacred.

DEE. The name of two rivers in Scotland. The larger rises in five wells, 4000 feet above sea level, in the neighborhood of Ben Macdhui (Map: Scotland, F 2). After flowing 12 miles south-southeast, it is joined by the Geauley, 1294 feet above sea level, tumbles through a narrow chasm, called the Linn of Dee, runs east-northeast through Aberdeenshire and a small part of Kincardineshire, and ends in the North Sea at the harbor of Aberdeen. The river is not navigable except near the mouth, where it has been altered in order to increase the dockage at Aberdeen. In its course of 90 miles it receives the Lun, Muick, Fough, etc. On its banks is Balmoral Castle. The river is remarkable for the clearness of its waters and is noted for its salmon. The smaller Dee rises near the northern boundary of Kirkeudbrightshire (Map: Scotland, D 5). For the first 40 miles it flows southeasterly, then westerly, falling into the Solway Firth at Kirkeudbright Bay. It is about 50 miles long and navigable for the last 7 miles.

DEE, JOHN (1527-1608). An English astrologer and mathematician. He was born in London, was educated at St. John's College, Cambridge, lived for some time at the University of Louvain, and in 1550 he lectured at the College of Rheims on the *Elements* of Euclid with great success. In 1551 he returned to England, was introduced to Edward VI, and was pensioned: but during the next reign he was falsely accused of attempting Queen Mary's life and came very near being executed. Queen Elizabeth received him kindly and promised him an appointment. This promise was not fulfilled, and Dee again set out for the Continent in 1564, ostensibly for the purpose of presenting to Emperor Maximilian a book, *Monas Hieroglyphica*, which he had previously dedicated to him. Lilly, however, in his *Memoirs*, affirms that he acted as Queen Elizabeth's "intelligencer," or spy. In 1594 he was made chancellor of St. Paul's Cathedral and in the next

year warden of Manchester College. He died very poor. Dee's writings, mostly on the occult sciences, were published in London in 1659.

DEED (an act, *Lat. factum*, something done). A written instrument, sealed and delivered, whereby a legal right is created or transferred. Though the term is popularly employed only in connection with instruments for the conveyance of land, it is not, in the legal sense, thus restricted, being equally applicable to a considerable variety of other legal transactions effected by the same solemn form. A contract, an appointment to office, the surrender of a right of action, may be effected by deed, as well as the transfer of title to land or goods. In other words, it is not the event, or transaction, but the manner in which it is performed, which constitutes the deed. So, too, it is in a popular rather than a strictly legal sense that a sealed writing, in and by itself considered, is described as a deed. Until delivered to the party who is to have the benefit of it, it is still a mere writing, an escrow (*écrit, scriptum*), an inchoate deed. The perfected deed is compounded of three distinct things—the writing, the act of sealing, and the act of delivery.

The superior validity of a transaction effected by deed, as compared with one consummated by spoken words or by ordinary writings, is a matter of history. Blackstone declares that a deed derives its name (*deed, factum*) from the circumstance that "it is the most solemn and authentic act that a man can possibly perform with relation to the disposal of his property; and therefore a man shall always be estopped by his own deed, or not permitted to aver or prove anything in contradiction to what he has once so solemnly and deliberately avowed" (2 Bl. Com. 295). In fact, the deed is the one form in which the formal or ceremonial mode of incurring an obligation or transferring a legal right survives among us, corresponding in that respect to the *mancipatio* and the *stipulatio* of the Roman law, the latter of which still appears in the usual ceremony of marriage. Recent investigations into early legal procedure show conclusively that in primitive society a peculiar importance and validity attaches to legal transactions of the formal sort, and, though the tendency of advancing civilization is to reduce or eliminate the distinction between formal and informal obligations, this has never been completely accomplished. The conclusive effect of a deed is probably due to the fact that it originated at a time when writing was a rare accomplishment, confined to those who had taken holy orders, and that its character, as a solemn form of engagement, had become established before the art of writing became more general. Its superior validity still consists in the fact mentioned by Blackstone, in the passage quoted above, that he who makes a deed is conclusively bound by the statements which it contains, and that, in contracts and other transactions which ordinarily require a consideration to support them, no consideration is necessary if the transaction be consummated by deed. Technically a contract in the form of a deed is known as a specialty.

Deeds are of two kinds, deeds poll and indentures—the former being of only one part, i.e., binding only one person or group of persons, in the same way and to the same effect; and the latter having two or more parties, who become bound to one another. Thus, the ordinary deed

of conveyance, whereby A, or A and B, convey land to C, the latter entering into no engagement with reference to the transaction, and the grantor or grantors, only, executing it, is a deed poll; whereas articles of association or of partnership, or any other bilateral contract, under seal, whereby several parties become mutually bound to one another, is an indenture. The names are derived from the circumstance that deeds of the latter sort were formerly written in duplicate, etc., on the same piece of parchment, which was then cut so as to separate them by an indented and irregular line, whereby their identity could afterward be established. The deed poll, on the other hand, only one copy being required, was polled, i.e., shaved or cut off smooth. This difference in the form of deeds having disappeared, the term "indenture" is often carelessly employed in deeds which are really deeds poll. The distinction between them has not, however, been obliterated by their assimilation in form, and a deed purporting to bind only one party, or, whatever it may purport, executed by only one, is still a deed poll and binds only the giver thereof and not the person to whom it is delivered.

Deeds have from an early period been employed for the transfer of certain interests in land, but their general and almost exclusive use for this purpose is quite modern. Formerly, at common law, freehold interests in land were created or conveyed by the formal ceremony known as livery of seisin, while all estates less than freehold were subject to alienation by parol, deeds being required only to convey the class of interests known as incorporeal, such as easements, profits, future interests in land, and the like. But deeds have now, under the technical description of grants, almost entirely superseded other modes of conveyance of interests in land. Only estates for years or tenancies at will are still capable of arising by parol or by writing not under seal, and in England even leaseholds, for three years and upward, can be created or transferred only by deed. In Great Britain and most of the United States the general use of deeds for purposes of conveyance is a matter of regulation by statute.

In form, however, the deed remains substantially the same as at common law. The writing must still be on paper or parchment, though it may to-day be done by the typewriting machine or the printing press. The old requirement of a seal is also generally adhered to, though in a few of the Western States it has been abolished, and in most others a scroll, or similar mark made with the pen, may be substituted for the more usual wafer or sealing wax. But, whatever its form, the important thing is not the adhesion to the paper of something called a seal, but the sealing of the instrument by the party to be bound by it. It must be "his own act and seal." At the present time, also, it is generally considered that the instrument must contain the name of the maker in his own handwriting, although prior to the Statute of Frauds, in 1648, signing was not necessary to the validity of deeds, and it is not clear that the statute contemplated any addition to the formalities with which they were already surrounded.

Delivery is properly accomplished by the obligated party handing over the sealed writing

in person to the party to be benefited thereby. Either party may, however, be represented by an agent, and a delivery to an unauthorized third person is good if subsequently ratified by the benefited party. Indeed, it has been held that any unequivocal act on the part of the obligated party, showing an intention to vest the possession of the document in the benefited party, is sufficient to constitute a delivery, even without a manual transfer of possession to any one—as where the former, at or after the time of sealing, utters the words “I deliver this as my act and deed,” or where he incloses the sealed writing in an envelope, addressed to the benefited party, though retaining it in his own possession. There is some conflict of authority, however, as to whether a delivery of the latter sort, or to a third person, which, in fact, never comes to the knowledge of the party intended to be benefited, will be sustained by the courts. There may also be a conditional delivery, which is made to a third person, as an escrow, or mere writing, to be delivered over to the benefited party on the performance of some act or the happening of some event. An escrow does not take effect as a deed until the delivery over, when it takes effect, by relation back, as of the time of its first delivery. See ESCROW, and the titles of the various kinds of deeds, as COVENANT; GRANT; LEASE AND RELEASE. Consult: Coke on *Littleton*; Blackstone, *Commentaries on the Laws of England*; Kent, *Commentaries on American Law*; Pollock and Maitland, *History of English Law* (2d ed., Cambridge and Boston, 1899); Holmes, *The Common Law* (Boston, 1881); and the authorities referred to under REAL PROPERTY.

DEEMS, CHARLES FORCE (1820-93). An American clergyman. He was born in Baltimore, graduated at Dickinson College in 1839, and was agent in North Carolina for the American Bible Society. He was professor of logic and rhetoric in the University of North Carolina from 1842 to 1847, and of natural sciences in Randolph Macon College (then in Boydton, Va.) in 1847-48. He then became a Methodist preacher at Newbern, N. C., and in 1850-54 was principal of the Greensboro (N. C.) Female College. In 1865, after holding several charges in North Carolina, he went to New York, where he helped found (1868) the Church of the Strangers (undenominational), of which he was pastor until his death. The Mercer Street Presbyterian Church building was given to this church by Cornelius Vanderbilt, whose gifts for Vanderbilt University, Nashville, Tenn., were secured through Dr. Deems. In 1881 he founded the American Institute of Christian Philosophy, and he edited for several years its organ, *Christian Thought*. The Institute founded in his honor a lectureship in philosophy (1905) at New York University. Among his many publications are: *Life of Dr. Adam Clarke* (1840); *The Home Altar* (1850); *Annals of Southern Methodism* (1856); *Life of Jesus* (1872); *A Scotch Verdict in Evolution* (1886); *The Gospel of Common Sense as Contained in the Canonical Epistle of James* (1889); *The Gospel of Spiritual Insight, and Studies in the Gospel of John* (1891). He edited several hymnals. Consult his *Autobiography* (New York, 1897), with memoir for the years after 1847 by his sons.

DEEM'STER, DEMPSTER, or DOOMSTER (AS. *dōm, doom, judgment*, as in *Domesday Book*;

hence *doomster* or *deemster*, a judge). The name of an officer formerly attached to the High Court of Justiciary in Scotland, who pronounced the doom or sentence of condemned persons. The office was held along with that of executioner. At the conclusion of a trial this dread official was produced in open court, in presence of the criminal, as is graphically described by Scott in his tale of *Old Mortality*. See notes to that work and also notes to *Heart of Midlothian*. The office of deemster has been long abolished.

In the Isle of Man and in Jersey deemsters are judges, the office as well as the title being of great antiquity and dignity. The highest judicial authority in the Isle of Man is divided between two deemsters, one for the northern and the other for the southern half of the island.

DEEP'ING, (GEORGE) WARWICK (1877-). An English novelist, born in Southend, Essex. He was educated at Merchant Taylors' School and at Trinity College, Cambridge (B.A., 1898), studied medicine at Middlesex Hospital, practiced for a year, and then adopted literature as a profession. His popular romances, not unlike Maurice Hewlett's in manner and subject, include: *Uther and Igraine* (1904), *Slanderers* (1905), *Bess of the Woods* (1906), *A Woman's War* (1907), *Bertrand of Brittany* (1908), *Mad Barbara* (1909), *The Rust of Rome* (1910), *The Lame Englishman* (1911), *Joan of the Tower* (1911), *Strong Hand* (1912), *House of Spies* (1913), and *The White Gate* (1914), a story of contemporary England.

DEEP RIVER. A river rising in Guilford Co., N. C. (Map: North Carolina, C 2). It flows southeast and then east, joining the Haw River (q.v.) in Chatham County, forms the Cape Fear River (q.v.). About 120 miles long, the stream drains an area of 1350 square miles. Large coal and copper deposits are found in its valley. It furnishes considerable water power at Lockville and is navigable to Carbondon.

DEEP-SEA EXPLORATION. The depths of the sea have been explored with precision only during comparatively recent years. Deep-sea investigations began in the necessity for accurate soundings for submarine cables, and this is still the main reason for sounding, but much more has been accomplished in this field by dredging for purely scientific purposes.

The most important part of our knowledge of deep-sea conditions has been gained since 1870. The *Challenger* expedition sent out by the British government from 1873 to 1876 (see CHALLENGER) engaged in pelagic investigations for nearly four years, sounding and dredging in the oceanic basins at more than 350 different places. This vessel was well equipped and carried a scientific staff under the direction of Sir Wyville Thomson. A great amount of deep-sea work was accomplished, and the large series of *Reports* form the most important contribution ever made to the literature of this subject. Other extensive deep-sea investigations have been conducted at various times by most of the European governments, while vessels of the United States Coast Survey or of the Fish Commission have been engaged in them more or less regularly since 1870. The Prince of Monaco has made very important contributions to this department of knowledge, as

he has for many years employed his yachts almost entirely in deep-sea work, and has devoted much time to the improvement of the appliances for investigation.

The methods employed by the earlier investigators for measuring the depths were slow and uncertain, for their soundings were made with hemp rope, which was greatly drifted by currents and gave inaccurate depths. The soundings and dredgings conducted on the *Challenger* were so made and often under great difficulties. At the present time such investigations are made by means of wire, the first successful employment of which was by Sir William Thomson in 1872. Wire sinks rapidly, presents the least frictional surface, and is but little affected by currents; and the machinery is now so perfect that soundings may be made with accuracy in the greatest depths. The improved methods show that the early soundings by the *Herald*, *Congress*, and other vessels with rope, supposed to have reached over 7000 fathoms, were erroneous, and that there are probably no such depths in the ocean.

The greatest depth known was discovered by the United States cable-survey ship *Nero* in 1900, near the island of Guam, where a sounding was made of 5260 fathoms, or nearly 6 statute miles, a depth sufficient to submerge the highest mountains. It is probable that future soundings will reveal slightly greater depths. For four years prior to the voyage of the *Nero* the deepest water known was north of New Zealand, where the British ship *Penguin* sounded in 5155 fathoms. Off the coast of Japan, in 1874, the United States ship *Tuscarora* found a depth of 4635 fathoms; and in 1900 the United States Fish Commission steamship *Albatross* made a sounding in the western Pacific of 4813 fathoms. Many great depths have been discovered in the Atlantic, the deepest (4561 fathoms) off Porto Rico, by the United States Coast Survey steamer *Blake*. More than 40 "deeps," or depressions ranging from 3000 to 5200 fathoms, are now known, some of them mere holes, others of vast extent. The deeps are well distributed over the seas, but none have been found north of the fifty-fifth degree of latitude. The average depth of the sea is probably not less than 2200 fathoms.

Method of Sounding. In the operation of sounding several instruments are sent down with the wire. A thermometer takes the temperature at the bottom; a closing cylinder brings up a specimen of the bottom water for analysis, and the sounding cylinder at the end of the line brings up a specimen of the bottom mud or ooze, for examination as to the character of the bottom. These instruments are all self-acting at the bottom and are not affected in rising to the surface.

To the sounding cylinder is attached the sinker—a 60-pound iron shot—which detaches itself on striking the bottom. An indicator attached to the reel on deck shows the number of fathoms of wire that have run out. After sounding the wire is reeled in by steam. It takes about one hour to make a sounding 3 miles deep and get the instruments back on board.

Deep-Sea Dredging. The methods employed on board the United States Fish Commission steamship *Albatross*, doubtless the best-equipped deep-sea dredger in existence, may be taken as

illustrative. The *Albatross* has brought together larger deep-sea collections than have been made on any other vessel. She has made nearly 6000 hydrographic soundings and nearly 2000 hauls of the dredge or beam trawl. The investigations of this vessel cover areas extending from the Banks of Newfoundland along both coasts of North and South America to Bering Sea, and also limited areas in the tropical Pacific, and in the regions between Japan and Kamchatka. Her work has carried dredging into deeper waters than ever before, animal life having been obtained near the Tonga Islands at a depth of 4173 fathoms, while the dredge on one occasion in Bering Sea brought up from a depth of 1771 fathoms more than 800 deep-sea fishes at a single haul.

The creatures of the deep sea are brought up by means of a dredge or beam trawl towed by a wire rope, operated by a powerful engine on deck. The first operation in dredging is to ascertain the depth by sounding, after which the trawl is put overboard and allowed to sink to the bottom as the dredge rope is let out. The dredge, or beam trawl, is simply an iron frame to which is attached a strong bag-shaped net about 20 feet long. The mouth of the dredge, as formed by the iron frame, is about 11 feet wide and 2 feet high. Dragged along the bottom, it quickly fills with animals. Sometimes it settles into mud or ooze and is very hard to lift. The dredge rope is connected with a large spring, or accumulator, attached to the foremast, which often shows the dredge to be pulling thousands of pounds. Before the dredge reaches the surface, most of the oozy mud washes away, so that the dredge haul is usually light enough to be hoisted from the water and landed on deck with safety. Sometimes it is filled with fishes; sometimes with sea urchins, starfishes, crinoids or corals; sometimes with squids and devilfish. It often brings up a varied collection, in which many classes of marine animals are represented. The time required by the *Albatross* in making her deepest dredge haul—that from 4173 fathoms—was 10 hours, the engine reeling in the great weight of line very slowly. In depths of 1000 to 1500 fathoms hauls can be made in three or four hours, according to conditions.

In addition to the dredge, another collecting machine, very useful on rough bottom, is the "tangle." This consists of bunches of shredded rope attached to iron bars, and when dragged over the bottom it frequently brings up sea urchins, starfish, and crinoids in abundance. A deep-sea fishtrap has been devised by the Prince of Monaco, in which fishes have been taken as deep as 2 miles. The *Albatross*, in 1897, succeeded in setting ordinary gill nets a mile deep and catching *Macrurus* and other deep-water fishes. Deep-water exploration by means of gill nets, traps, and trawl lines promises to yield interesting results.

Deep-Sea Life. The surface of the sea nearly everywhere bears an abundance of minute animal and plant life. In this surface life, or "plankton," as it is called collectively, many groups of invertebrates are represented. The phosphorescence often seen upon the surface of the sea is due entirely to their presence. These almost microscopic creatures are constantly dying and falling to the bottom. They constitute the principal food of the smaller animals dwelling there; and their remains form

a large part of the deep-sea oozes. The most important forms among them, considered with reference to abyssal deposits, are the Globigerinidae and the radiolarians, which are enormously abundant.

The marine deposits on the ocean floor are generally referred to three groups. Those of the continental slopes are called Terrigenous Deposits, derived from the land through the wearing action of rivers, tides, and currents. These coastwise deposits are the blue, green, coral, or volcanic muds, and are characteristic of the adjacent land slopes from which they are derived. Farther off shore, generally about 200 miles, occur the Pelagic Deposits, made up of dead marine organisms from the surface—the minute surface life already referred to. Here we find oozes, such as diatom, radiolarian, or globulina oozes which depend respectively upon the character of the surface life prevailing above them. Beyond these, in the deeper parts of the ocean, are the Red Clay Deposits, which cover about half the ocean floor. This region is not affected by matter from the land and receives little pelagic matter from the surface. It lies so deep that the shells of surface organisms falling down are removed through the solvent action of the deep water. The red clay is believed to have formed very slowly, not more than a few feet of matter having accumulated since the Tertiary period.

Intermediate Depths. The question as to the existence of life at intermediate depths has been given general reconsideration since the perfecting of closing townets for the exploration of such depths. The experience gained with the various intermediate nets used on board the *Albatross* has shown no mingling of surface and bottom forms. The latter occur, of course, at all depths along the continental slopes. See DISTRIBUTION OF ANIMALS.

From the evidence now at hand with respect to light in the sea, it seems certain that the sunlight does not extend below a couple of hundred fathoms and even there becomes very dim. Below this the vast body of the ocean is absolutely dark, being illuminated only where phosphorescent creatures may shed a certain amount of steady or intermittent radiance (see below).

Conditions and Life at Great Depths. It is always cold at the bottom of the sea, the influence of the warm surface waters not extending below a few hundred feet. In the great depths the temperature is always close to the freezing point. In warm equatorial seas, where the depths exceed 400 fathoms, the difference between surface and bottom temperatures usually ranges from 40° to 49° F. It has been found that from 100 fathoms down, or throughout the waters beyond the influence of the sun, temperatures remain practically constant. At the surface of the sea the lines of equal temperatures are parallel with the equator, although subject to deflections by currents, while at the bottom they follow the general trend of the continents. The cold water of the depths comes from regions far to the north and south of the tropics, the coldness being due to the water in polar or subpolar regions sinking and gradually spreading itself over the ocean floor. If for any reason the cold polar waters should cease to flow downward towards the deep tropical basins, the deep-sea water would rise in temperature, and deep-sea life would perish

from lack of the air which the polar currents absorb at the surface and carry down with them. So far as is known, the bottom currents are extremely slow, and, as the water is not affected by storms, it is likely that the lower part of the deep sea is a place of calm repose.

There is a tremendous pressure of water in the depths—so great, in fact, that it will crush all objects that are not constructed to resist it. All deep-sea instruments are made to withstand a pressure increasing about a ton to the square inch with each 1000 fathoms of depth. At the greatest depth known there would therefore be a pressure of nearly six tons to each square inch of surface. The tissues of deep-sea animals are so permeated by fluids, however, that a balance is maintained, and at the bottom they may be as firm as animals of the shallow waters. Most of these creatures are so soft that, when withdrawn from the pressure which keeps them in a firm condition at the bottom and brought to the surface, they must be treated carefully to prevent their going to pieces. The bones of abyssal fishes are especially cartilaginous. When deep-sea creatures are dragged to the surface from deep water, they are always dead, and doubtless die during an early stage of their upward journey.

Phosphorescence and Color. It has been mentioned that no light reaches the abyssal regions, which are absolutely dark so far as sunlight is concerned; hence plant life is unknown there, and all the animals of the depths are carnivorous.

Deep-sea dredging, however, has brought up so many phosphorescent animals that there can be little doubt of considerable phosphorescent light in the depths. The amount of such light given off at the surface is no measure of that produced under normal conditions at the bottom. Phosphorescent organs take many forms in the depths and occur in both fishes and invertebrates.

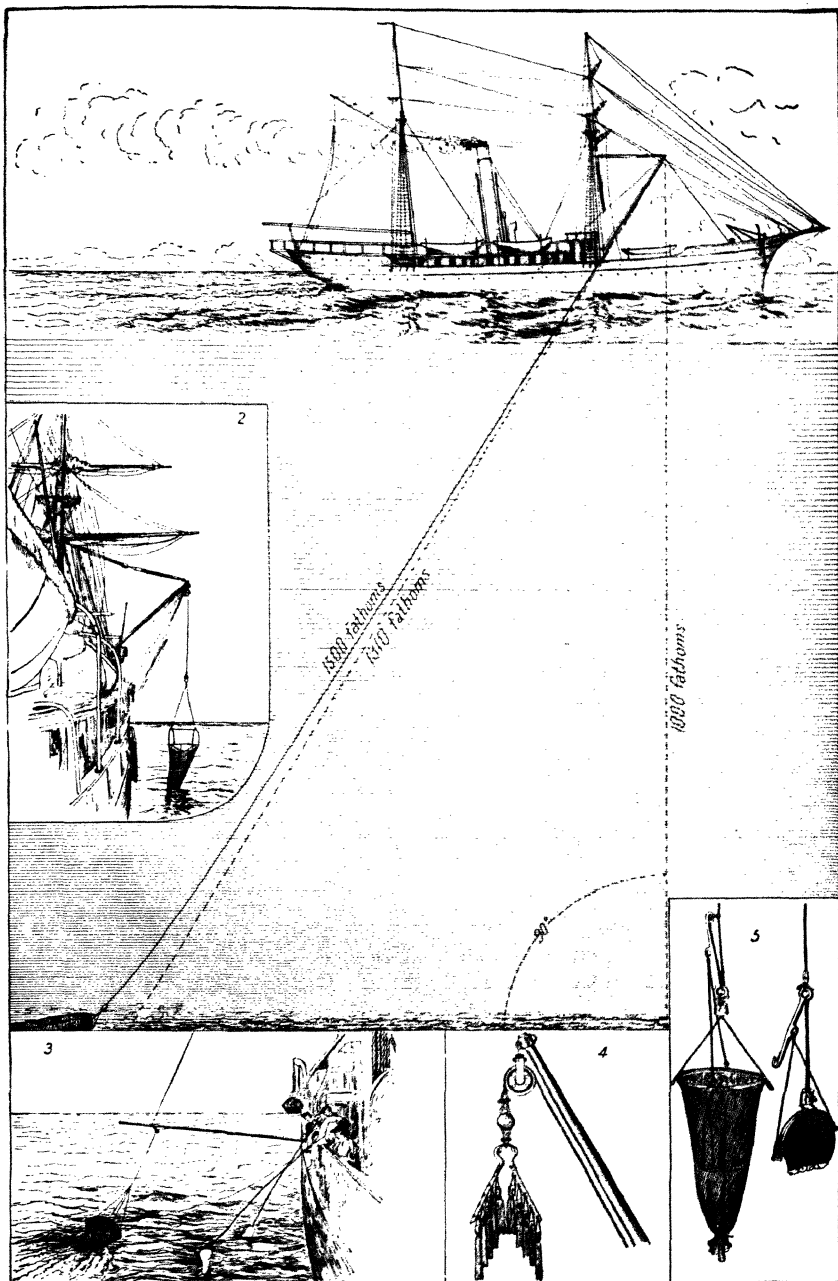
The colors of deep-sea animals are usually as brilliant as those of animals living under the influence of light, although not so varied. The reds, yellows, purples, and greens predominate, and the colors, when they occur at all, are apt to be in solid masses, in striking contrast, or the whole animal is of a uniform brilliant coloration. There is a conspicuous absence of blue. The fishes, as a rule, are dark-colored, but many of the crustaceans, holothurians, and starfish are brilliant.

Some of the deep-sea animals are blind. Those that have eyes probably capture their prey by the phosphorescent light shed from their own bodies and the bodies of the vast number of other creatures that are constantly flashing their faint lamps over the ocean floor. Fishes of the greatest depths have the smallest eyes, while those of moderate depths have very large eyes, as, for instance, those of the *Macrurus* type.

EXPLANATION OF PLATE

1. Method and theory of deep-sea dredging, as practiced on the U. S. S. *Albatross*. 2. The deep-sea dredge and its derrick. 3. Gathering the surface life, by hand nets, and by a towing net rigged to the port boom. 4. The tangles, showing its rigging. 5. The Townsend intermediate net, open and closed. Having been sunk to the depth desired, it is towed for a time, and then a sliding weight is allowed to run down the line, striking the ring which holds upright the iron arm hooked to the towrope, it dislodges the ring and releases the arm, which falls, permitting a weight beneath it to slide down and pinch together the folding rim of the netting bag, which may then be drawn up without loss of contents.

DEEP-SEA EXPLORATION



1. U.S.S. ALBATROSS dredging.
2. THE DREDGE AND ITS RIGGING.
3. SURFACE NETTING
4. TANGLES.
5. INTERMEDIATE SELF-CLOSING TOW-NET.

Many of them have highly developed organs of touch. Some of the fishes have enormous jaws, much larger proportionately than are found among shallow-water forms. Their teeth also are more formidable. See *MACRURUS*, and *PLATE OF CODFISH AND ALLIES*.

Size. All the animals that have so far been brought up from deep water have been taken in dredges of moderate size—so small, in fact, that they are only capable of taking small animals, the largest specimens of fishes seldom exceeding 4 or 5 feet in length. It is quite possible that by using larger dredges larger animals could be taken.

Conclusion and Bibliography. It will be seen from the foregoing that the fauna of the depths lives under such extraordinary conditions as temperature close to the freezing point, pressure amounting to a ton to the square inch for each 1000 fathoms of depth, and darkness except for light due to phosphorescence.

Consult: Thomson, *Depths of the Sea* (London, 1873); Wild, *Thalassa* (ib., 1874); *Reports and Narratives of the Challenger Expedition* (see *CHALLENGER EXPEDITION*); A. Agassiz, *Three Cruises of the "Blake"* (Boston, 1888); annual *Reports, Bulletins*, etc., of the United States Fish Commission (Washington, 1872 onward); *Bulletins and Memoirs of the Museum of Comparative Zoology* (Cambridge, 1875 onward); Tanner, *Deep-Sea Exploration* (Washington, 1897); Townsend, *Records and Bibliography of the "Albatross"* (ib., 1901); Murray, *The Depths of the Ocean* (London, 1912); and the 40-odd quarto volumes in which the Prince of Monaco publishes his studies, *Résultats des campagnes scientifiques*.

DEEP-SEA FLOUNDER. A name given locally in the North Atlantic States to both the plaice and the pole flounder (qq.v.).

DEEP-WATER SCULPIN. See *SEA RAVEN*.

DEEP-WATER TROUT. See *SQUETEAGUE*.

DEEP-WATER WHITING. See *WHITING*.

DEER. (AS. *dēor*, wild beast, animal, Ger. *Thier*, animal, Goth. *dīus*, wild beast; cf. AS. *dēor*, bold, OHG. *tiurlih*, wild). The popular name for even-toed, hoofed mammals of the family Cervidæ and subfamily Cervinæ. The musk (q.v.), usually called musk deer, forms a distinct subfamily, which is sometimes accorded full family rank. More than 50 species of deer are known, occurring in all parts of the world except Australia and southern Africa. South-eastern Asia especially abounds with them, some of the largest as well as many of the smallest living there. Only two species of deer dwell in the whole continent of Africa, and both of these are near relatives of European species and occur only in the northern parts of the continent. In North America there are perhaps 8 or 10 species of deer, while Central and South America possess a much larger number.

Deer are characterized by the absence of a gall bladder and the possession of upper canines, lateral digits on both fore and hind feet, a remarkable suborbital sinus or tear pit below each eye, and antlers. Antlers are the most noticeable of these characters, though they are usually present only in the male. The female reindeer has antlers, and individual females of other species sometimes have small ones. Antlers (q.v.) are outgrowths of bone, which are covered with a thin, highly vascular hairy skin during their growth, but when this is completed the blood supply is cut off, and the skin, or "velvet,"

as it is called, dries up and is peeled off, leaving the bone bare. Antlers are renewed annually, the fully formed pair becoming detached from the "pedicels" on which they were developed, and a new pair arising at the same place. Antlers are usually shed soon after the close of the breeding season. An antler may be straight and unbranched, but usually there are branches, called *times* or *snags*. The number of these increase with age, so that the most handsomely developed antlers are found only on fully matured males. The antler and its branches are generally more or less cylindrical or terete, but in some cases they are very much expanded and flattened, and the antler is then called "palmated."

Deer are animals of very graceful form, combining compactness and strength with slenderness of limb and fleetness. They have for many centuries been renowned as objects of the chase, and the flesh of many species is highly esteemed for food, under the name "venison." The best-known species, which may serve as an example of the group, is the European red deer (*Cervus elaphus*), the adult male of which is the "stag," and the female is the "hind." The former is sometimes nearly 7 feet long and over 4 feet in height, but the hind is much smaller. The body is covered by a double coat of fine wool and longer, coarse hairs, the latter longest on throat and chest. The wool is brownish gray, and as it is longest and most abundant in winter, the summer coat is brighter-colored and smoother. The young are spotted with white. The antlers are at first unbranched and show only the number of times characteristic of the adult in the fifth year, and it is not until then that the young male is dignified with the name "stag." An old stag is called a "hart." The hinds and young stags are usually found together in large herds, but the older stags occur in smaller groups, while harts are generally found alone. The feeding time is during the evening and at night. The food varies with the season; in winter it is chiefly lichens, moss, bark, and buds, while in summer leaves and herbs form most of the diet. Stags are said to eat only fungi during the breeding season. The red deer occurs in all parts of Europe and in northern and western Asia. It is exterminated as a wild animal in populous districts, but is preserved as an object of the chase, or as a semi-domesticated pet, in all parts of western Europe, though not so common in Great Britain as the fallow deer. It is exceptionally swift of foot and an excellent swimmer, and all of the senses are marvelously acute. The hinds and fawns are gentle and can be tamed as pets, but the stags are untrustworthy and become quite dangerous during the breeding season.

The American deer (*Cariaacus* or *Odocoileus virginianus*) is considerably smaller than the stag, but resembles it in many of its habits. It is found throughout the eastern United States, ranging northward into southern Canada, west to the Missouri, and south to Florida and Texas. West of the Missouri it is replaced by the very similar white-tailed deer (*Cariaacus leucurus*), and south of the United States by the Mexican deer (*Cariaacus mexicanus*). The American deer are very fond of water, especially in the summer, and at that season feed very largely on water lilies, in seeking which they often go far out into shallow ponds and lakes. They are fine swimmers, and often enter the water during the

day to escape from flies and other insects, but they feed chiefly at night. Owing to this habit, a method of hunting known as "jacking" is often practiced, by means of boats. A brilliant light, known as a "jack light," is placed at the bow, while the hunter is stationed in the shadow behind. The boat is then pushed quietly through the lily pads until a deer is heard or seen; attracted by the bright light, the animal turns full towards it, and the hunter, seeing the reflection of the light in the deer's eyes, can make his aim sure. Under similar circumstances George Shiras, 3d, of Pittsburgh, Pa., secured a series of fine photographs of deer beside lakes in northern Wisconsin, by using a flash-light apparatus, operated by a trigger and instantaneous plates. In color the American deer is somewhat variable, there being a marked seasonal change as well as much individual and geographical diversity. In summer the upper parts are more or less chestnut red, and become more cinnamon-colored along the sides; the under parts are white. In winter the upper parts become more gray, so that there is a general slaty-blue cast, and the deer is then said to be "in the blue." Deer no longer occur commonly south of Vermont, New York, and Michigan, except in some of the less-settled portions of the Southern States. Protective legislation has led to a marked increase in the number of deer in Vermont and some other States, but excessive hunting during the open season is reducing the numbers elsewhere.

Besides the North American deer above mentioned, the Western mule deer (*Cervacus macrotis*) demands a word, on account of its remarkable ears. These are 8 inches long and well covered with hair.

Classification. The classification of deer is now based largely upon the structure of the feet and the antlers. There are two main groups of deer, the Plesiometacarpalia and the Telemetacarpalia. The former are all Old World deer, except the wapiti (q.v.), and have the proximal portions of the lateral metacarpals present, and the vomer never divides the posterior osseous nares into two distinct passages. This group comprises the genera *Cervulus*, the muntjacs (q.v.); *Elaphodus*, with a single small Chinese species and *Cervus*. This last genus includes many species and is subdivided, chiefly according to the form of the antlers, into seven groups, as follows: (1) Rusine, in which the antlers have no tine (known as the bez) just above the lowest or brown tine, the beam is upright and simply forked at the tip, the brow tine rises close to the base, and the angle formed with the beam is acute; (2) Reevesine, beam somewhat flattened, and bifurcates into two branches, which again divide, and the brow tine is given off at an obtuse angle and curves upward; (3) Elaphurine, beam straight, erect, with a long, straight back tine; (4) Axine, antlers rusine, but body of adult marked with rows of white spots; (5) Pseudaxine, similar to axine, but the antlers have a forked beam, of which the posterior tine is the smaller; (6) Elaphine, a bez tine is present, and the rounded beam splits up into a number of small tines often arranged in a cup-like manner; (7) Damine, the antlers are palmated near the tip. See ANTLES, where illustrations of various forms are given.

Of these seven groups the Elaphine is the most important, including the red deer and wapiti, but the well-known sambar (*Cervus*

aristotelis) of India is rusine, the swamp deer (*Cervus duvaucelli*) of the same country is reevesine, the axis is axine, the Japanese deer (*Cervus sika*) is pseudaxine, while the fallow deer (*Cervus dama*) is damine.

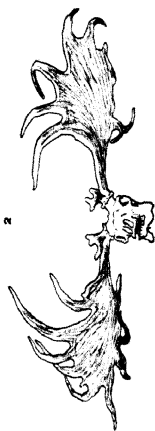
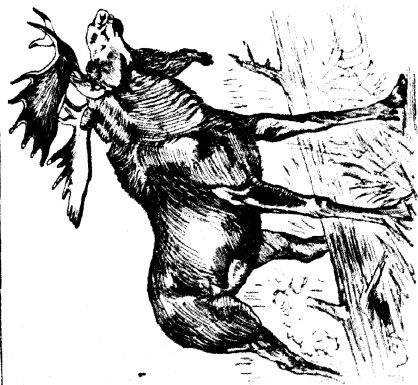
The Telemetacarpalia include all the American deer except the wapiti, and several Old World species also. The distal extremities of the lateral metacarpals are present, and the vomer usually divides the posterior nares into two distinct orifices. The genus *Rangifer* contains the reindeer and caribou; *Alces*, the elk, or moose; and *Capreolus* includes the roe deer of Europe and Asia. The Chinese water deer is a remarkable little species without antlers and is the sole representative of the genus *Hydropotes*. The genus *Cariacus* includes, besides the three species already mentioned, a number of others found in the western United States and in Central and South America. They may be grouped in four sections, known as the Cariacine, Blastocerine, Furciferine, and Coassine. The North American deer all belong in the first section, while the last one includes the small South American deer known as brockets. The genus *Pudu* includes only a single diminutive species, the pudu, which is less than 18 inches high and lives in the Andes of Chile.

Fossil Deer. The earliest fossil remains of deer are found in the Middle Miocene strata, where the group is represented by several species of *Palamertyr*, at least one of which had antlers. Remains of other genera occur in the Pliocene and Pleistocene. *Cervus* proper appears in the Pliocene. The notable giant deer, or "Irish elk" (*Cervus giganteus*), possessed enormous palmated antlers, 11 feet from tip to tip. It represents a distinct section of the genus, called megacerotine. The remains are found in Pleistocene deposits over a large part of Europe, but are especially common in the peat bogs of Ireland, where they were first discovered. See ELK.

Consult. Hamilton-Smith (ed.), *Griffith's Animal Kingdom* (London, 1827); Caton, *Antelope and Deer of America* (New York, 1877); Lydekker, *Deer of All Lands* (London, 1898), colored quarto plates, with descriptions of all species; Roosevelt (and others), *The Deer Family* (New York, 1902); Scrope, *Days of Deer Stalking* [red deer] in the *Scottish Highlands* (London, 1883); St. John, *Sportsman and Naturalist in Sutherlandshire* (ib., 1891); Jeffries, *Red Deer* (ib., 2d ed., 1892); *Deer Stalking* ("Fur and Feather Series," ib., 1896); Lantz, "Deer Farming in the United States," in *Farmers' Bulletin* 330, United States Department of Agriculture (Washington, D. C., 1908); id., "Raising Deer and Other Large Game Animals in the United States," in *United States Biological Survey, Bulletin* 36 (Washington, D. C., 1910). Consult also the authorities mentioned under STILL-HUNTING.

DEERFIELD. A town including four villages, in Franklin Co., Mass., 33 miles north of Springfield, on the Connecticut River, and on the Boston and Maine and the New York, New Haven, and Hartford railroads (Map: Massachusetts, B 2). It has agricultural interests and manufactures of pocket books and art novelties. The town contains a public library, Dickinson High School, and Deerfield Academy. The government is administered by annual town meetings. The water works are owned by the municipality. Pop., 1900, 1969; 1910, 2209. A

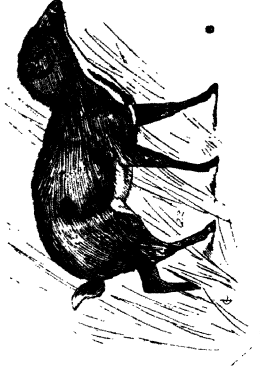
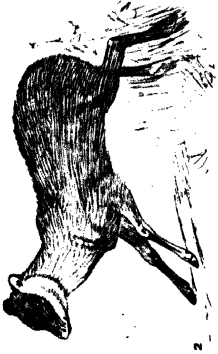
DEER OF NORTH AMERICA



1. MOOSE OR EUROPEAN ELK.
2. ELK-LIKE ANTLERS OF EXTINCT IRISH DEER.
3. WOODLAND CARIBOU OR AMERICAN REINDEER.

4. WAPITI, the " elk " of the Western United States.
5. EASTERN CARIBOU OR BLACK-TAILED DEER.
6. EASTERN, VIRGINIAN, OR WHITE-TAILED DEER.

FALLOW DEER, MUSK, ETC.



part of the town was annexed to Greenfield in 1890.

Deerfield was founded in 1671 and incorporated in 1673. Near here, on Sept. 19, 1675, the Indians caught Captain Lothrop and 84 men in an ambush. The latter were reinforced, and the Indians driven off, but the colonists had suffered a loss of 63 killed and 7 wounded. On Feb. 29, 1704, the French and Indians surprised the place, killing 49 and capturing 100 of the inhabitants, while many of the buildings were destroyed. The captives were taken to Canada, a number being murdered on the way. Some of the survivors were liberated in 1706. Consult Sheldon, *A History of Deerfield, Mass.* (Deerfield, 1895-96), and Powell, *Historic Towns of New England* (New York, 1898).

DEERFIELD RIVER. A river rising in Windham Co., southern Vermont (Map: Vermont, C 8). It flows south into Massachusetts, where, after forming the boundary between Franklin County and the northeast corner of Berkshire County, it flows in a generally southeasterly direction nearly across Franklin County and empties into the Connecticut River near Deerfield. It is about 60 miles long in a general direction and drains an area of 650 square miles. The stream has a fall of 1023 feet from Readsboro, Vt., and furnishes extensive water power there and at Hoosac Tunnel and Shelburne Falls. Its valley is famed for its beauty.

DEER FLY. A gadfly which attacks deer; especially, in North America, the small green or yellow tabanids of the genus *Chrysops*.

DEERHOUND. See GREYHOUND.

DEERING, CHARLES (1852-). An American manufacturer, born at Paris, Me. He graduated from the United States Naval Academy in 1873 and served as an officer in the navy until 1881, when he resigned to become secretary of the Deering Harvester Company. After this firm was merged with others in the International Harvester Company he became chairman of the latter's board of directors.

DEERING, WILLIAM (1826-1913). An American manufacturer, father of Charles Deering, born at Paris, Me. He was educated at the Readfield Seminary. Engaging in the woolen mill and dry-goods business, he became a member of the commission and wholesale dry-goods firm of Deering, Milliken & Co., of Portland, Me., and New York City. In 1873 he established, at Plano, Ill., the harvester business which bears his name, and until his retirement he was president of the Deering Harvester Company and of the William Deering & Co.

DEER LODGE. A city and the county seat of Powell Co., Mont., 40 miles north of Butte, on the Northern Pacific and the Chicago, Milwaukee, and St. Paul railroads, and on the Deer Lodge River (Map: Montana, D 3). It contains the State penitentiary, the College of Montana (Presbyterian), St. Mary's Academy, St. Joseph's Hospital, and a public library. Farming and cattle and sheep raising are the principal industries, and there are railroad repair shops and creameries. Gold mining is also carried on. Pop., 1900, 1324; 1910, 2570.

DEER MOUSE. Any of several wild mice, which resemble a deer in colors and movement. The name is most properly applied in North America to the jumping mouse (*Zapus hudsonius*), but is also given to the white-footed mouse (*Peromyscus leucopus*). See MOUSE, and accompanying Plate of MICE AND JERBOAS.

DEER'S HAIR. See SCURFUS.
DEER-SLAYER, THE. One of Cooper's *Leatherstocking Tales*, the first of the series written, but the last published (1841). The title is the sobriquet of the leading character, Natty Bumppo.

DEERSTALKING. See STILL-HUNTING.

DEER-STEALING. In English law, the statutory offense of hunting, killing, or carrying off any deer in any forest, chase, or park, whether private and inclosed or public and uninclosed. By the common law deer at large are *feræ naturæ* ('wild animals'), but the penchant of the Norman kings and their immediate followers for the hunting of deer caused that animal to be invested with a peculiar sacredness, and led at a very early period to the enactment of stringent forest and game laws for their protection. The matter is now regulated by a series of game laws, beginning with 16 Geo. III, c. 30. See FOREST; GAME LAWS; POACHING.

DÉS MAGYAROS. See DÉS MAGYAROS.

DE FACTO (Lat.). A legal phrase, signifying "actual, based on fact": as distinguished from "de jure," which means "based on law." It is commonly employed of the occupancy of public office or the exercise of political or other authority without legal warrant or by one whose legal title thereto is defective. Under a government of law a merely de facto authority may always be impeached, the proper legal remedy in England and in the United States being by the common-law writ of quo warranto, issued by a court of competent jurisdiction, to bring the offender into court and inquire "by what warrant" he has presumed to exercise the office or authority in question.

Used in this general sense, as opposed to a de jure, or lawful, authority, the exercise of de facto authority is always a usurpation, and it maintains this character so long as it continues, or until it is legalized by proper legislative or other authority. Any public office, administrative, legislative, or judicial, may be usurped and its powers exercised by de facto authority; but the phrase has no application to the case of an excessive or other illegal exercise of power by a duly constituted authority, which does not amount to an assumption of any other office than that which it possesses. Nor does mere usurpation of an office without the actual exercise of its functions constitute the usurper an officer de facto. The authority claimed must be effective and actually exercised in order to give it the de facto character.

It is in this general sense of a power actually exercised, but without legal authority, that the term "de facto" is employed in international and constitutional law. It is thus applied to a revolutionary government, as the Continental Congress—whose acts gained legal sanction through the success of the Colonies and the recognition of their independence by Great Britain—or the President and Congress of the Confederate States—whose de facto exercise of authority gained for them a certain measure of international recognition, but remained to the end, in point of law, an illegal usurpation. Acts performed by such an authority are wholly void and may be impeached in any proceeding, direct or collateral.

In administrative law, however, the term "de facto" is commonly used in a narrower sense, to describe the exercise of illegal authority, but with apparent right and under color of legal

authority. The acts of an officer thus acting have a certain validity, so far as the interests of the public and of third persons are concerned, and cannot be questioned in any collateral proceeding. But they may be directly impeached—as by a refusal to recognize the *de facto* authority, or by instituting proceedings to test the usurper's title to the office exercised by him, or, at the common law, by a civil suit for the wrongful intrusion into office or for the profits thereof taken by the usurping official. But the mere possession of an office is *prima facie* evidence of a valid title thereto, and *de facto* authority is presumed to be *de jure* also, until the contrary is made to appear in an appropriate proceeding instituted for that purpose. Where an office has been exercised *de facto* in good faith, as by one believing himself to be rightfully entitled to it, or where in cases of public danger an official commits unwarranted acts of authority, it is usual for the legislature by a subsequent act of indemnity (q.v.) to legalize the unlawful acts so committed. See ADMINISTRATIVE LAW; OFFICE; and consult the authorities there referred to.

DEFAMATION (Lat. *diffamare*, from *dis*, priv. + *fama*, report). The infringement of the right of reputation; specifically, the publishing of any matter concerning an individual which is untrue in fact, and which has a tendency to impair his public reputation. The right of every man to the good name which he has earned by a long course of good conduct is recognized by every developed system of law. It is regarded as a species of property, a valuable asset, of which no one can deprive him with impunity. Its violation is a legal wrong, or tort, and it may under some circumstances be a public wrong, or crime.

As reputation is the estimation in which a man is held by the community in which he lives, the gist of the injury lies in the publication of the imputation upon his character. If communicated to him privately or written out for the purpose of publication, but not actually communicated to a third party, it is no violation of the right of reputation, no matter how unjust it may be. Furthermore, the law will protect reputation only in so far as it is fairly earned. A truthful imputation upon character is no violation of the right. But even the publication of derogatory matter which is in fact untrue may not amount to defamation in the legal sense. The imputation may be too vague and general, or too trivial to be regarded, or, although definite and harmful, it may be uttered under such circumstances of privilege as to justify and excuse it.

In general it may be said that an action will lie for defamation in those cases, and in those cases only, (1) in which the charge or accusation is shown to have caused special pecuniary damage to the plaintiff; (2) in which the plaintiff is charged with the commission of a crime; (3) in which the present existence of an offensive contagious disease is imputed to him; (4) in which the conduct of his profession or trade, or of an office of public trust held by him, or his fitness therefor, is impugned; (5) in which unchastity is imputed to a woman. In all these cases but the first, the words or acts charged are defamatory *per se*, and are actionable without proof of special damage resulting therefrom, and in all of them the action will lie whether the derogatory words were spoken or

written. In the case of a written imputation, however, which is technically called a libel, special damage need never be shown, but it is enough to satisfy the jury that the words complained of were such as to bring the plaintiff into ridicule, odium, or contempt.

The most important and comprehensive ground of justification for imputations upon character is the privilege of fair criticism and comment on public men and affairs. This exists only in communities, like England and the United States, in which the government is of a free and popular character, and the liberty of the press and of public discussion has reached a high point. This privilege does not cover mere abuse, nor the malicious imputation of dishonesty and incapacity, nor the invasion of the private and domestic life of the person accused, unless this has some bearing on public affairs. But every citizen is protected in the honest expression of opinion, however severe and unjust it may be, concerning matters of public interest and general concern, whether political or not, so long as the limits of fair criticism are not exceeded. Privilege may also exist in matters of private concern, under special circumstances, as in comments on character made by a judge, advocate, or witness in the course of a judicial proceeding, such statements being privileged unless made maliciously or recklessly.

Reference has been made to the fact that the publication of defamatory matter may, under some circumstances, be a violation of the criminal law. This is never true of mere slander, or spoken defamation, but only of libel; and it is theoretically justified on the ground that written or printed attacks on character are likely to lead to breaches of the peace or to prove subversive of the good order and morals of the community. It seems more probable, however, that the criminal proceedings in libel cases are a survival of the primitive right of private vengeance for injuries of this character, which has, in process of time, been taken over by the state. See TORT; LIBEL; SLANDER, PRIVILEGED COMMUNICATION; and consult the authorities there referred to.

DEFARGE, *de-färzh'*, THÉRÈSE. The wife of the keeper of the wine shop in Dickens's *Tale of Two Cities*; a type of the remorseless virago of the French Revolution.

DEFAULT (OF. *defaulte*, It. *diffalta*, from Lat. *de*, away + *fallere*, to fail). In law, the failure of a party to a suit to take the next step in the process of litigation incumbent upon him, within the time limited by the practice of the court. Originally the term was limited to the nonappearance of a party in court on the day assigned in the writ or summons, but it is now employed of a similar failure at any stage of the cause. In general, the effect of a default on the part of the plaintiff is to entitle the opposing party to a nonsuit, and the default of the defendant renders him liable to a judgment in accordance with the demand of the declaration or complaint. Formerly, in suits at law, these results were final, but the procedure of the equity tribunals permitted the opening of defaults for cause shown, and this is now the general practice, at law as well as in equity, in the courts of England and the United States. Usually, however, the default can be reopened and the cause reinstated on the calendar of the court only on the payment of moderate costs by the party in default. See PROCEDURE.

DEFEASANCE (OF. *defoisance*, from *de-faire*, Fr. *défaire*, to make void). A proviso annexed to a conveyance of land or goods, whereby the latter shall become void in some specified event. At common law the term was confined to such a proviso contained in a separate instrument from the act or deed of conveyance, the term "condition" being proper to describe a similar term or provision contained in or forming a part of the conveyance itself. At the present time, however, the latter is often referred to as a clause of defeasance. It is commonly employed to effect a mortgage, which is, properly speaking, a conveyance of property with a defeasance reinstating the title of the mortgagor upon the payment of the mortgage debt. In the United States the defeasance is usually incorporated in the mortgage deed, but in England a mortgage often takes on the form of an absolute deed with a separate deed of defeasance, made by the mortgagee to the mortgagor, specifying the condition on which the conveyance of the property is to become void. Ordinarily a separate instrument of defeasance must be delivered at the same time as the deed of conveyance which it is intended to affect, so as to form part of the same transaction. If given subsequently, it may have the effect of a covenant, enforceable in a separate action by the grantor of the property, but it will not in that event convert the grant into a mortgage.

At common law it is also necessary that a separate defeasance, in order to have the intended operation, should be "of as high a nature" as the conveyance itself, i. e., should also be in the form of a deed. But the courts of equity have always admitted parol evidence of the agreement, understanding, and purpose with which a conveyance was made, and have given effect to such a proviso, even though it was not embodied in a deed or other written form. Accordingly an absolute deed conveying a parcel of land for the real purpose of securing the payment of a debt is, in practical effect, a mortgage and may be redeemed as such. See **CONDITION; MORTGAGE**, and consult the authorities there referred to.

DEFENDANT. The person who is sued in an action at law or in equity. Blackstone says: "In every court there must be at least three constituent parts—the actor, or plaintiff, who complains of an injury done; the reus, or defendant, who is called upon to make satisfaction for it; and the judex, or judicial power, which is to examine the truth of the fact, to determine the law arising upon that fact, and, if any injury appears to have been done, to a-certain, and, by its officer, to apply the remedy" (3 Bl. Com. 25).

The term was originally limited to the person sued in a *personal* action at common law, the one against whom a *real* action was brought being described as "the tenant," the complaining party in that case being known as "the demandant," and these expressions are still employed to distinguish the contending claimants to real property in several of the United States. But in most States, as well as in England, the term "defendant" has come to designate the party used in any form of action and in any court. See **PARTIES**.

DEFENDER OF THE FAITH (trans. of the Latin, *Fidei Defensor*). A title conferred on Henry VIII by Pope Leo X in recognition of his treatise, *Assertio Septem Sacramentorum*, directed against Martin Luther in 1521. When

Henry suppressed the religious houses at the Reformation, Pope Clement VII recalled the title and deposed him. In 1544 Parliament confirmed the title, which has ever since been used by the sovereigns of Great Britain.

DEFENDER OF THE MARRIAGE TIE (*Defensor Matrimonii*). An office created by Pope Benedict XIV in the year 1741. Its object is, in all cases of actions for the annulment of marriage, to defend the marriage bond in its integrity. Marriage, being a sacrament in the Catholic church, is, like the other sacraments, most jealously guarded. The "defender" is clothed by ecclesiastical authority with the same or similar powers that the prosecuting attorney in civil law, in criminal procedure, is endowed with. He usually acts as a referee in civil-court proceedings. The office was instituted in America by the Third Plenary Council of Baltimore in 1884, and is now extended until each Catholic diocese has its "defender" ecclesiastically appointed, ready to defend the integrity of the marriage agreement before any court of proper jurisdiction, and to carry an appeal to a higher court, if needed. Consult Taunton, *The Law of the Church* (London, 1906).

DEFENSE (Lat. *defendere*, to ward off). In criminal law, the right of forcible resistance to an attack by force on person or property. The exercise of this right may be a justification of the charge of assault or homicide. It is restricted to the employment of so much force as is reasonably necessary for the protection of one's self, his wife, children, and other members of his household, his personal property, and, where a felony is threatened, as burglary or arson, his real property. He may also resist by force a violent attempt to commit a trespass, even without felonious intent, upon the premises constituting his dwelling. For the limitations upon the exercise of the right of defense, see **ASSAULT; HOMICIDE**.

In the law of civil and criminal procedure, the answer of the defendant in a suit to the cause of action set up by the plaintiff. As commonly employed under the reformed procedure in England and many of the United States, the defense includes the *demurrer*, in which the facts alleged by the plaintiff are admitted, but their legal effect is denied, and the justification by the defendant of the acts of which the plaintiff complains, as well as the bare denial of the allegations of the complaint or statement of claim. It does not, however, cover a counterclaim (q.v.), or separate cause of action, set up by the defendant.

Under the highly technical procedure of the common law, defense (from French *defender*, to deny) was only the first step in the defendant's answer to the plaintiff's cause of action, and was limited to a denial of the truth or validity of the complaint. This was followed by the *plea*, under which the jurisdiction of the court and the legal validity of the facts alleged in the complaint might be questioned, and the justification of the defendant set forth. This system of pleading still obtains in several of the American States, but the term "defense" has generally come to have the wider meaning assigned to it above, which includes the plea and demurrer of the defendant as well as his technical defense. Formerly, also, the term had no reference to the answer interposed by a defendant to the charges contained in a bill or information filed in an equity proceeding, being restricted to

actions at law. Under the reformed procedure, however, this distinction no longer obtains, and the term "defense" may be employed in either forum.

In general, it may be said that the defense must contain a specific denial or justification of each and every allegation of the complaint, together with a statement of any facts relied upon by the defendant to relieve him from the plaintiff's claim of liability. It must usually be verified by the defendant or his solicitor or attorney and served upon the plaintiff or his legal representative within a limited time—usually 20 days—after the service of the complaint. The defense once made, the cause is at issue and may usually proceed to trial without further pleading. See ANSWER; DEMURRER; PLEA; PLEADING; and consult the authorities there referred to.

DEFENSE OF POESIE, THE. The name under which Sir Philip Sidney's *Apologie for Poesie* was reprinted in 1598, with the third edition of the *Arcadia*.

DEFERENT (Lat. part. *deferens*, bearing away). An old term in astronomy, signifying a circle on which the centre of another circle moves, while a body is supposed to be moving on the latter itself. If we suppose the sun to be moving round a centre in space, while the earth moves, say, in a circle round the sun, then the sun is moving in the deferent. The term originated in the Ptolemaic system (q.v.).

DEFFAND, DA'fän', MARIE ANNE DE VICHY-CHAMBROND, MARQUISE DU (1697-1780). A Frenchwoman, celebrated in her day for her caustic wit and remarkable beauty, and still so to-day for the soundness of her judgment. The style of her letters is ranked by Sainte-Beuve with that of Voltaire, the model of French prose writers. She was a conspicuous figure in the brilliant salons and gay suppers of the period. Later on, her own aristocratic salon at the Convent of St. Joseph was frequented by Voltaire, Montesquieu, D'Alembert, the famous *encyclopédistes*; D'Alembert, however, abandoned her for the young Mademoiselle de Lespinasse, her protégée and former reader. At 68 the now blind Marquise conceived a violent passion, in spite of her cynical nature, for Horace Walpole, the famous English Premier, who would have more openly reciprocated her love had he not feared the ridicule of his contemporaries. Among her clever sayings the following bon mot furnishes the best keynote to her character: "I was bored, which accounts for all my follies." Her works exist as *Correspondance complète publiée par de Lescure (excepté lettres à la duchesse de Choiseul)* (1865); several *Letters to Horace Walpole* were collected by Miss Berry (London, 1810). Consult Sainte-Beuve, *Causeries du Lundi*, vols. i. xiv, and De Ségur, *Esquisses et récits: Mme. du Deffand d'après des documents inédits* (Paris, 1908).

DEFIANCE. A city and the county seat of Defiance Co., Ohio, 51 miles west by south of Toledo, on the Maumee River, at the junction of the Auglaize, on the Miami and Erie Canal, and on the Wabash, the Baltimore and Ohio, and the Ohio Electric railroads (Map: Ohio. B 3). It is the seat of Defiance College, opened in 1885, and contains a Carnegie library and Fort Defiance. There are several flour mills, extensive machine shops, wagon works, pressed-steel factories, etc., and the city has a large trade in agricultural products and live stock. Pop., 1900, 7579; 1910, 7327.

DEFIANCE COLLEGE. An institution for higher education, organized under its present name in 1902 at Defiance, Ohio. It is the successor to the Defiance Female Academy, chartered in 1850 and opened for students in 1885. The college is under the control of the Christians. The grounds consist of 28 acres, on which are four large, modern, fully equipped buildings and a residence for the president. Connected with the college is the Christian Biblical Institute, which has a separate board of trustees but the same president. The college includes a college department, a department of music, a normal department, and a commercial department. The total enrollment in all departments in 1912-13 was 456, of whom 186 were in the college department. The total number of instructors was 28. The total assets of the institution at the end of the year 1913 amounted to \$520,480; of this \$312,358 was endowment. The total income from all sources for the year 1912-13 was \$41,398. The library contains about 7000 volumes. The president of the college since its foundation has been P. W. McReynolds, D.D.

DEFICIENT NUMBER. An integer whose divisors added together make a sum less than the number itself; e.g., 16 is a deficient number, since the sum of its divisors, $1 + 2 + 4 + 8 = 15$, is less than 16. The term goes back to the Greek theory of numbers. See PERFECT NUMBER.

DEFILA'DING. Determining the direction and height of a parapet which will give protection from hostile fire; or, selecting a natural screen which affords concealment from hostile observation. In the latter sense positions for field-artillery batteries are designated as follows: if the guns are posted so that through the sights the hostile position can just be seen over the mask or screen, the battery has *sight defilade*; if a dismounted man can just see the hostile position, the guns have *dismounted defilade*; if mounted, *mounted defilade*; if the flashes of the guns are concealed, *flash defilade*. Consult *Field Artillery Drill Regulations, U. S. A.* (1911). See FORTIFICATION.

DEFILE' (noun, Fr. *défilé*, pass.). Any passage which compels troops to advance in column formation. DEFILE, verb intransitive, not in common use, means "to march with narrow fronts," as in column of files, i.e., one behind the other, as in *Indian file*. See DEBOUCHING.

DE FILIPPI, FILIPPO. See FILIPPI, FILIPPO DE.

DE FIN'IBUS BONO'RUM ET MALO'RUM (Lat., On the Limits of Good and Evil). A philosophical treatise by Cicero.

DEFINITION (Lat. *definitio*, from *definire*, to bound, from *de* + *finire*, to fix a limit). The act of making clear one's meaning in the use of a term. This may be accomplished by giving a synonym whose meaning is beyond doubt, as is often done in dictionaries. But traditional logic calls for something more explicit than this. It demands that the *definiendum* (i.e., the term to be defined) shall be assigned to a class including other terms with the same general meaning. This class is called the *genus*, and the term that names this class is called a generic term. There is a second requirement which is met by stating the attribute or combination of attributes which marks off the objects denoted by the *definiendum* from the other objects within the same genus. This differentiating attribute or combination of attributes is

called the specific difference, or the *differentia*. A logic definition is thus the designation of genus and specific difference.

But there are many terms which cannot be defined in accordance with the above requirements. Formal logic recognized one such term in the *summun genus*, the class to which all things belong, and which therefore does not itself belong to a higher class, from which it may be differentiated by some specific attribute. This class is usually identified as "being." But logical definition presupposes the possession of a number of terms whose meanings are already known, and it gives a meaning to a definiendum by correlating it generically and specifically with these other terms. When, however, we come to define these other terms, we enter upon a movement which is either circular or which ends in something which can be defined only by identification, i.e., by directing attention to it in some manner, such as pointing. Such terms as space, time, similarity, and relation cannot be defined logically without what is technically known as a *circulus in definiendo*. Here, as elsewhere, the requirements of formal logic should not be regarded as absolute, but as subverting the purpose of criticism.

DEFLECTION OF THE PLUMB LINE.

If the materials which compose the earth had the same density throughout, and if the materials were perfectly plastic, at least to long-continued stresses, then the visible surface of the earth would define a geometrical figure represented by an ellipsoid of revolution with the shorter axis joining the poles. This condition would also obtain if the earth were composed of concentric (or nearly concentric) layers of material with each layer having the same density throughout. Under the ideal condition the plumb line would always be normal to the surface of the ellipsoid. But the earth's surface shows materials of very different densities, and the recent investigations carried on by the United States Coast and Geodetic Survey prove that the materials in the earth's crust to a depth of about 76 miles below the surface have different densities under different places. They show that the material under the sea is heavier than that under the mountains. They also indicate that the earth's crust has only a small effective rigidity, and therefore the mountain range is floated by the lighter material under it, and the sea bottom is depressed by reason of the denser material in the crust below. The water surface over the oceans and along canals projected, in imagination, through the continents would define an irregular surface called the geoid, which deviates somewhat from the ideal ellipsoid of revolution. This deviation is due to the variations in the direction and force of gravity resulting from depressed ocean beds and projecting mountains and to the heterogeneous densities in the earth's crust. The plumb line will be, at each point, perpendicular to the geoid surface rather than to the mean surface of the earth, the ellipsoid of revolution. The angle between the normals to the geoid and the ellipsoid at any point is called the deflection of the plumb line or of the vertical. The deflection is given in two components—one in the plane of the meridian and the other in that of the prime vertical. Usually the deflections of the vertical are spoken of as the differences between the geographic positions, as computed on the ellip-

soid of revolution, and the astronomic positions, as determined from observations on the stars. This is not strictly true, because of inaccuracies in the dimensions of the adopted ellipsoid of revolution, also to some error (possibly only slight) in the assumed longitude and latitude of the initial station from which all the other geographic positions are computed.

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DEFOE, DANIEL (c.1660-1731). An English journalist, novelist, and miscellaneous writer, author of *Robinson Crusoe*. He was born in London late in 1659 or early in 1660, the son of James Foe, a dissenting butcher of Northamptonshire stock, and he retained the family name Foe until after he was 40 years old. Comparatively little is known of his life until he reached middle age. He was educated for the Presbyterian ministry, but abandoned it, probably going to Spain as apprentice in a commission business and then doing some traveling. Before January, 1684, when he married Mary Tufley, who bore him several children and survived him, he had become a wholesale hosier in Cornhill. He took an obscure part in Monmouth's Rebellion; supported William of Orange heartily in 1688-89, having at that time a good standing in the city, engaged in speculative commerce, and failed about 1692 for a rather large sum. Meanwhile he had done some studying and writing, his earliest identified publication being a verse satire, *A New Discovery of an Old Intreague* (1691). Friends helped him to his feet, and in a few years he had established a manufacture of bricks and pantiles and was paying off his debts. In 1697 he became a prolific pamphleteer in political and ecclesiastical controversies and issued the most important of his early books, *An Essay upon Projects*, in which he put forward many plans for social betterment, his discussion of banking, insurance, road making, and the education of women being surprisingly modern in tone. In 1701 he gained a national reputation through his poem "The True-Born Englishman," which defended King William from attacks made on him as a foreigner, and through his bold "Legion's Address," which demanded from the Commons the release of certain political prisoners known as the Kentish Petitioners. He was now at the zenith of his career so far as regards popularity with his contemporaries. He was introduced to the King and served him politically in some unascertained way, and he was recognized as one of the ablest exponents of Whig views. In the latter capacity he is seen at his best in the tract entitled *The Original Power of the Collective Body of the People of England* (1701).

The death of William in 1702 marked a great

change in Defoe's fortunes. Queen Anne was a strong churchwoman, and the High-Churchmen were encouraged to attack the dissenters in violent sermons, to which Defoe replied in far from mild pamphlets, such as *A New Test of the Church of England's Loyalty and The Shortest Way with the Dissenters* (1702). The second of these, a monologue hoax, which represented a high-flyer as advocating a drastic rooting out of dissent, was taken seriously by all parties and construed as a libel by the government. On the appearance of an advertisement for his arrest Defoe went into hiding and escaped detection for nearly five months, until the end of May, 1703. He was tried in July, found guilty, and given a very severe sentence, which included three exposures in the pillory. When he underwent this punishment, the fickle mob treated him like a hero, and his spirited "Hymn to the Pillory" (1703) was hawked about the crowd. But his business was ruined, he felt himself to be forever disgraced, the injustice rankled, and his character steadily deteriorated. He might, while in prison, collect his Whiggish tracts and poems and issue new ones, but he was soon to become an unscrupulous journalist, a wily political agent, a pamphleteer capable of writing on any or all sides of any cause.

Defoe's stay in Newgate was much shorter than his early biographers believed. He was released in October or November, 1703, through the good offices of Robert Harley (q.v.), who wished to utilize his serviceable pen. With Harley's approbation he not only wrote many tracts and made journeys as an election agent in the interest of the Whigs, but he established his famous newspaper, *The Review*, as an organ of political moderation and of liberal commercial views. This journal—which was not first issued from Newgate, as is often stated—ran, mainly as a triweekly, through eight yearly volumes and a supplementary ninth (1704-13) and marked an important stage in the evolution of British journalism. It was written by Defoe single-handed, and it appeared with surprising regularity despite his protracted absences from London. Between 1706 and 1710 these absences were mainly due to his services in Scotland as a secret agent. Under Harley's directions he was indefatigable in urging by pen and voice the union of England and Scotland, and later (1708-10), under Godolphin, he labored to allay Scottish discontent and to thwart Jacobite intrigues. His success was striking and his reward inadequate, hence he rapidly became less trustworthy. Meanwhile he displayed remarkable fecundity as a writer, issuing, besides his newspaper and many tracts, his prose political allegory, *The Consolidator* (1705), his mammoth political satire in verse, *Jure Divino* (1706), and his dull but accurate and valuable *History of the Union* (1709). Probably his only important contribution to literature proper during these years is his extraordinarily realistic *True Relation of the Apparition of one Mrs. Veal* (1706).

From the fall of 1710 to the fall of 1714 Defoe was once more in the employ of Harley (Lord Oxford) and was in consequence forced to do much of his writing as a semi-Tory. During the Sacheverell agitation he had been pronouncedly Whig, but late in 1711 he adroitly shifted the policy of the *Review* in order to sup-

port peace with France, he wrote many tracts with the same end in view, and he secretly attacked Marlborough and the Dutch. There is strong evidence, however, that he also wrote on the Whig side, and it is clear that in two particulars he remained staunch to his old principles. He opposed all measures against the dissenters—e.g., the Schism Bill (1714)—and he did not waver in supporting the Hanoverian succession. Perhaps his most important writings of this period belong to political economy, a subject in which he had already displayed competence, as in his famous *Giving Alms No Charity* (1704). Numerous tracts on the South Sea Scheme, *An Essay upon Publick Credit* (1710), *A General History of Trade* (1713), and the important journal, *Mercator* (1713-14), issued to support Bolingbroke's abortive plans for freer trade with France, made up a body of economic literature well worth study. His political pamphlets, however, have attracted most attention, since some of them, notably the ironical *Reasons against the Succession of the House of Hanover* (1713), almost led, through the intrigues of Whigs angry at his deserting them, to his trial for high treason. In this connection he reflected in the *Review* on Chief Justice Parker, and in May, 1713, he was imprisoned a few days for contempt.

The fall of Oxford and the death of Queen Anne (1714) led to another crisis in Defoe's affairs. He lost the pension the Prime Minister had paid him, on which he had managed to establish his family comfortably at Stoke Newington. He lost also Oxford's favor through indiscreet revelations in *The Secret History of the White Staff* (3 parts, 1714-15), written in support of that statesman. An article reflecting on Lord Anglesey led furthermore to a prosecution for criminal libel. To crown all, he seems somewhat to have broken down in health in the fall of 1714. The story of how he extricated himself from his difficulties and at the age of 55 entered upon the most important stage of his career is too complicated to be told here. He began to display redoubled energy as a writer, composing histories, popular manuals such as *The Family Instructor* (1715-18) and the like, and issuing numerous pamphlets in support of King George, particularly at the time of the rebellion of 1715. He was convicted of the libel on Lord Anglesey, but he escaped punishment by working on the feelings of Chief Justice Parker, and by showing that worthy and the Secretary of State, Lord Townshend, that he would be very useful to the Whig interest as a spy and journalist. The public still regarded him as a Tory; so it was arranged that he should edit mildly Tory journals and secure employment on Jacobite papers like the weekly published by Nathaniel Mist, toning down disaffected articles and reporting to the governments facts about disloyal writers. This disgraceful employment may have lasted 10 years, but it dates mainly from 1716 to 1720, and is chiefly connected with *Mist's Weekly* and a monthly political compilation, *Mercurius Politicus*. Defoe kept his labors so secret that for nearly a century and a half it was generally supposed that after the death of Queen Anne he had touched politics only in an occasional tract, such as his plausible account of his own career, *An Appeal to Honour and Justice* (1715). The effect of such conduct on

his standing as a man needs no comment: but it should be noted that his "Letters Introductory" in *Mist's* were important precursors of the "leading editorial" in modern journalism.

Need of a large income for an expensive family, which included several marriageable daughters, now led Defoe to increase his output of books, but he remained no less active as pamphleteer and journalist. Such volumes as *Memoirs of the Church of Scotland* (1717), the forged *Minutes of the French diplomat Mesnager* (1717), and the *Continuation of the Letters of a Turkish Spy* (1718) gave him needed practice in the art of narration, and led, more naturally than critics have noted, to his masterpiece based on the experiences of Selkirk (q.v.), *The Life and Strange Surprising Adventures of Robinson Crusoe of York, Mariner* (April 25, 1719). The unexampled success of this story—at least eight genuine and pirated printings of 1719 are known—not only led to a new era in the fiction of adventure, but stimulated Defoe's genius to the utmost. The *Further Adventures of Crusoe* immediately followed, his *Serious Reflections* in 1720, and for about five years, despite the fact that he founded new newspapers and wrote many pamphlets on the South Sea Bubble and other topics, Defoe supplied readers with a mass of fiction extraordinary for quantity and for realistic power. The *Life of the deaf-and-dumb fortune teller Duncan Campbell* (1720), *Memoirs of a Cavalier* (1720), *Captain Singleton* (1720), *Moll Flanders* (1722), *Due Preparations for the Plague* (1722), the better-known and masterly *Journal of the Plague Year* (1722), *Colonel Jack* (1722), *The Fortunate Mistress* ("Roxana," 1724)—these abbreviated titles and their dates constitute a remarkable record. The fiction also includes *A New Voyage Round the World* (1724), and Defoe later had at least a share in such books as *The Four Years' Voyages of Capt. George Roberts* (1726), *Memoirs of Capt. George Carleton* (1728), and *Madagascar; or Robert Drury's Journal* (1729). He was writing, with a slight intermission, almost to the day of his death, in London, April 26, 1731, and, remarkable to relate, when his vein of fiction began to dry up, he developed, although nearing 70, new resources as a miscellaneous writer. He wrote numerous lives of criminals—Jack Sheppard, Jonathan Wild, etc.—manuals of conduct and instruction, such as *Religious Courtship* and the equally popular and more interesting *Complete English Tradesman* (1725–27), contributions to topography, economics, and sociology, such as his valuable *Tour Thro' the Whole Island of Great Britain* (3 vols., 1724–27), *A Plan of the English Commerce* (1728), *Augusta Triumphans* (1728), and, last but not least, a series of works on occult subjects, the often reprinted *Political History of the Devil* (1726), *A System of Magic* (1726), etc. He may fairly be designated "The Old Man Marvelous," and there is the evidence of lawsuits and letters to show that he was still trying to make his fortune by manufacturing bricks, and that he was canny in negotiations with regard to the marriage portion of one of his daughters. There is also proof that he was philanthropical and that he had lived down much of his bad reputation as a bankrupt and a political turncoat and hireling. The notion of the early biographers that, after leaving unfinished in the

autumn of 1729 his *Compleat English Gentleman* (first published, 1890), he went into a state of mental decline, can be shown, through unimpeachable proof of his literary activity at the time, to be almost without foundation. In the last year of his life (1730) he was apparently connected in an important capacity with that well-known periodical, *The Political State*, founded by Abel Boyer. Much in his varied career and puzzling character remains obscure, but it is becoming clear that in versatility and copiousness of genius, though not in quality, he has very few rivals. In fiction no one has surpassed him in the use of minute details in order to produce the effect of lifelikeness, and he is a master of the homely vernacular.

As most of Defoe's writing was anonymous, no complete list of his works is obtainable. The latest (W. P. Trent, 1912) includes more than 375 titles; the addition of plausible attributions would swell it to 500. No edition contains a twentieth part of the ascertained writings. The fullest is that printed at Oxford in 20 vols. (1840–41); the best for the fiction is G. A. Aitken's in 16 vols. (1895–96). The chief biographers are Walter Wilson (3 vols., London, 1830), William Lee (3 vols.—two of newly discovered writings—London, 1869), William Minto (London, 1879, *English Men of Letters*), and Thomas Wright (London, 1894). The latest research is represented in vol. ix, chap. i of *The Cambridge History of English Literature*, contributed by Professor Trent.

DEFORCEMENT (OF, from *deforcer*, from ML. *disforcare*, to deprive by force). In English law, an ouster or deprivation of the freehold (q.v.). In the more general sense, in which the term is often employed, it includes any means by which the rightful owner of the freehold estate is put or kept out of possession, such as the wrongs of abatement, intrusion, disseisin, or discontinuance. But in its strict sense it is only a detainer of the freehold from him that has the right of property, but never had any possession under that right. The party thus wrongfully retaining possession was called the *deforcant* and was deemed to have an apparent right of possession. There was this difference between a party retaining possession of the freehold by means of *deforcement* and one who occupied by any of the other modes of ouster, that in the former case the party ousted had no right of entry (q.v.). This, previous to the reign of William IV, was a matter of some importance, inasmuch as the claimant was thereby debarred from recovering possession by means of entry or ejectment, and was driven to the more tedious process of asserting his right by a real action (q.v.). But by 3 and 4 Wm. IV, c. 27, all real actions, except four, having been abolished, this distinction between *deforcement* and the other means of ouster has ceased to have any practical importance. See **DISSEISIN**; **SEISIN**.

DEFOREST, JOHN WILLIAM (1826–1906). An American author and soldier, born at Humphreysville (now Seymour), Conn. He was educated in Europe and spent some years in the Levant. Before the Civil War he wrote *Oriental Acquaintance* (1856); *European Acquaintance* (1858); and *Sealiff* (1859), a novel. He served throughout the Civil War and emerged with the brevet of major. After the

war he took up the life of a voluminous writer and frequent traveler. Between 1870 and 1880 he published no fewer than nine novels, among them: *The Wetherell Affair* (1873); *Honest John Vane* (1875); *Justine's Lovers* (1878). He wrote also *The DeForests of Avesnes and of New Netherlands* (1900) and *Poems: Medley and Palestrina* (1902).

DE FOREST, LEE (1873-). An American inventor, born at Council Bluffs, Iowa. He graduated at Sheffield Scientific School (Yale) in 1896 and spent three years in postgraduate work at Yale. He became known as one of the pioneers in the development of wireless telegraphy in the United States. In 1902-06 he was vice president of the American De Forest Wireless Telegraph Company (now the United Wireless Telegraph Company), and in 1907 he became vice president of the Radio Telephone Company and also of the De Forest Radio Telephone Company. In 1904 he was awarded a gold medal at the St. Louis Exposition for his achievements in wireless telegraphy.

DE FOREST, ROBERT WEEKS (1848-). An American lawyer and publicist. He was born in New York City and was educated at Yale (A.B., 1870), Columbia (LL.B., 1872), and Bonn. When first admitted to the bar, he joined his father and uncle; later the firm included his brother and sons. After 1874 he was general counsel, and after 1902 vice president, of the Central Railroad of New Jersey, and he came to hold offices or directorships in a number of other corporations. Actively identifying himself with a variety of public interests, he served as president of the Charity Organization Society (New York City) after 1888; trustee after 1889, and president beginning in 1913, of the Metropolitan Museum of Art; president of the Municipal Art Commission (1905); chairman of the State Tenement House Commission (1900), and New York City's first tenement house commissioner; president of the National Conference of Charities and Correction (1903); vice president of the American Red Cross, and vice president of the Russell Sage Foundation. From 1905 to 1912 he was a vice president of the American Academy of Political and Social Science.

DEFORMED/ TRANSFORMED, THE. A drama by Lord Byron (1824), based partly on an old story, *The Three Brothers*, and partly on Goethe's *Faust*.

DEFORMITIES (Lat. *deformitas*, ugliness, deformity, from *de*, away, off + *forma*, form, shape). Varieties of form which mar the external appearance. Deformities may be divided into congenital and acquired, according as they occur before or after birth. The former class were considered by the ancients to carry some important meaning in their mysterious shapes and to show the anger of the gods; hence they termed them monsters, from *monstrare*, to show; and even in later times they were popularly believed to be the result of the most hideously unnatural combinations. Modern scientific writers have, however, made them a subject of special study under the name "teratology" (Gk. *teras*, monster, and *lógos*, *logos*, science), and their researches have shown that deformities generally depend on some arrest of development of the fetus, or some accidental position it has assumed, or some inflammatory disease which has caused unnatural adhesion of parts.

It has been found that in Paris one monster occurs in about 3000 births. Deformities are more common among domestic than wild animals, among mammalia than birds, and are very rare among fishes and the invertebrata.

It is a common belief that the mind of the mother has an influence over the shape of her infant; but although some singular coincidences have occurred, there is no scientific proof that such is really the case. Yet the theory was universally adhered to in the Middle Ages: it was, in fact, often appealed to in the interest of mercy, as a loophole of escape for pregnant women who, by the barbarous ignorance of the time, might be condemned to torture. Even at the present day no scientific demonstration to the contrary has proved sufficient to undermine the absurd belief. That deformities are in many cases hereditary may be seen in the instances of additional fingers and toes and of harelips. It seems uncertain whether the male or female parent chiefly influences the occurrence of deformity in the offspring. Cases are reported of a family of three with harelips whose father alone is similarly deformed; and another family of three with perfectly formed mouths whose mother has an uncorrected and extremely unsightly harelip. The chief congenital deformities may be classed under the following heads: 1. *Deformity as regards the number of parts.*—The Sirens, for instance, have apparently but a single inferior extremity, which tapers to a point, and the Cyclopes have but one eye. In some cases the head itself or some organ, as the brain, may be absent. Such deformities, from a deficiency of part, may also result from amputation of portions of the limbs of the fetus, when still within the uterus, by the pressure of the umbilical cord. Curiously enough, however, it often happens that this intra-uterine amputation of parts leads indirectly to an exactly opposite condition, viz., a multiplication of parts arising from the stumps left by these uterine amputations, the fetus in the early stages of its growth appearing to possess something of the power of reproduction of parts observed in many of the lower orders of animals. The parts most commonly reproduced are fingers and toes or, most commonly of all, only abortive portions of these, as little projections from the stump of the limb, with traces of nail, and sometimes a single joint with an imperfect bony development. We see a new growth of little fingers or toes according to the member lost, and this power shows itself sometimes without being preceded by such an injury, in additional fingers, toes, etc. These parts are generally close to the similar natural ones, but not always, as, e.g., an ear in the neck. 2. *Deformity with regard to size or volume.*—This may involve the whole body, as in dwarfs, of whom there have been some remarkable peripatetic specimens: the Corsican fairy was only 2 feet 7½ inches high; Mademoiselle Crachami, the smallest child that ever lived, died at 10 years of age, only 20 inches in height. This kind of deformity is not necessarily hereditary; the father of Borowlaski, who was only 39 inches when 30 years old, had six children alternately short and tall, and dwarf women have brought forth infants as long, when extended, as their mothers. In some cases one limb only is diminutive. Of course, deformities the opposite of these exist, such as giants, or instances

of premature or excessive local growth. O'Byrne, the Irish giant, measured 8 feet 4 inches when he died at the age of 22. Such individuals are generally subject to premature decay. 3. *Deformity as regards shape*.—This results generally from retarded growth, the parts of the embryo not consolidating as growth advances, as in harelip, or from irregular muscular contractions, as in clubfoot (q.v.); or by two or more parts coalescing, as two fingers; or in cyclopy, when both eyes run into one. 4. *Deformities of color* are frequently coexistent with a tendency to, or the presence of, some disease. There may be a deficiency of coloring matter, as in albinos; or an apparent increase, as in cyanosis (q.v.), or "blue disease," arising from the partition between the right and left sides of the heart not being completed; or from pigment abnormally placed in the body, as in the mottled individuals shown in the side shows of circuses. 5. *Deformities of continuity* occur from the lateral halves of the embryo not completely closing, as seen in clefts of the back, the palate, etc. Acquired deformities will be noticed under their special names. Consult Hirsch and Piersol, *Human Monstrosities* (Philadelphia, 1892).

DEFREGGER, dā'frég-ēr, FRANZ VON (1835–). An Austrian genre and historical painter, widely popular through his delineations of Tyrolese everyday life and of many stirring episodes in the history of his native land. He was born at Stronach, Tirol, April 30, 1835, the son of a peasant, and showed early a talent for drawing and wood carving, which he practiced untutored while tending his father's cattle. His career began late, for he lacked instruction till, in 1860, he went to Innsbruck to study sculpture under Michael Stolz, who, discovering his greater talent for painting, sent him to Munich, where he studied at the Academy under Anschütz. After 18 months spent in Paris (1863–64), with little if any benefit to his art, he returned to Munich in 1866, and in the spring following became the pupil of Piloty, to whose influence he is indebted for his technique. He now also found the sphere in which he was soon to score success after success, such subjects as "Joseph Speckbacher and his Son" (1869, Ferdinandeum, Innsbruck), a patriotic scene of soulful conception, and "Wrestling Match in Tirol" (1870), a spirited representation of this popular sport of his countrymen, being received with great favor, and most of his subsequent efforts finding their way into the principal galleries of Germany. The most noteworthy among these are, "The Last Summons" (1874, Vienna Museum), a stirring episode from the rising of the Tyrolese in 1809; "Return of the Tyrolese Riflemen in 1809" (1876, National Gallery, Berlin); "Andreas Hofer on his Way to Execution" (1878, Königsberg Museum); "Storming the Red Tower at Munich in 1705" (1881, Pinakothek, Munich). But he appears to even greater advantage in his village genre scenes, such as "The Prize Horse" (1872); "The Zither Player" (1876, Vienna Museum); the cleverly ironical "Fashionable Tyrolese" (1882, National Gallery, Berlin); "The Fortune Teller" (1891); "Before the Dance" (1892); and many others that have become widely known through reproductions. In technique they are less attractive, the color being thin and dry, the drawing lacking in naturalistic truth. Keen insight into character

and quaint humor are the main features of his compositions. He passed most of his life in Munich, where he was appointed professor at the Academy in 1878 and was ennobled in 1883. A "Defregger Album," with text by Rosegger, was published in Vienna (2d ed. in 1889–92), and "Vom Land Tirol," a collection of pictures with text by Haushofer, in Munich, 1895. Consult Rosenberg, "Defregger," in *Knackfuss, Künstler Monographien* (Bielefeld, 1897 and 1900), and Meissner, *Franz von Defregger* (Berlin, 1900).

DEFTERDAR, dēf'tēr-dār' (Turk. *defterdār*, from Pers. *daftar*, book + *dār*, keeping, holding). A title of the chief treasurer of a Turkish province, as formerly of the Turkish Minister of Finance, who has a seat in the divan (q.v.) and disburses the public money.

DE FUNIAC SPRINGS. A city and the county seat of Walton Co., Fla., 79 miles east by north of Pensacola, on the Louisville and Nashville Railroad (Map: Florida, B 6). It is in an agricultural and fruit-growing region which produces cotton, rice, sugar cane, grapes, and peaches, manufactures turpentine, and has also important lumber, poultry, and stock-raising interests. It is the seat of a Presbyterian college, the Thomas Industrial School, and of the Florida Chautauqua Assembly. The water works and electric-light plant are owned by the city. Pop., 1900, 1661; 1910, 2017.

DE GAMBOA, P. S. See SARMIENTO DE GAMBOA.

DE GARMO, CHARLES (1849–). An American educator, born at Mukwonago, Wis., and educated at the State Normal University, Normal, Ill., and at Halle, Germany. He was professor of modern languages in the Illinois State Normal University (1886–90), professor of psychology at the University of Illinois (1890–91), president of Swarthmore College from 1891 to 1898, and thereafter professor of science and the art of education at Cornell University. He was elected president of the National Herbart Society in 1892 and is considered the leader of the Herbartian school in the United States. Among his published works are: *Herbart and the Herbartians* (1896); *Language Series* (1897); a translation of Lindner's *Manual of Empirical Psychology as an Inductive Science* (1889); *Essentials of Method* (1889, 1907); *Interest and Education* (1902); *Principles of Secondary Education* (1907–10); *Laboratory Exercises in the Art of Appreciation* (1907); *Esthetic Education* (1913).

DEGAS, de-gās', EDGAR HILAIRE GERMAIN (1834–). A French genre and portrait painter. He was born in Paris, July 19, 1834, and was a pupil of Lamotte in the Ecole des Beaux-Arts, but learned more from the old masters in the Louvre and in Italy. Though usually classed as an Impressionist, he is in reality an independent, his art having been subjected to several different influences and being, above all else, personal. He at first painted in the manner of Ingres, and was also a great admirer of Delacroix, less for that artist's coloring than for the noble action in his pictures. His softness and fluency of modeling resembled the modeling of Manet, and from the Japanese he learned his absolute freedom of composition, fantastic decoration, and peculiar emphasis. His first works were etchings, portraits, and historical paintings, but he soon turned to genre pictures of modern life. Among

the large variety of subjects which he treated, the best known are his "Race Horses" and numerous "Ballet Girls." The former are distinguished for their fine movement, while the latter were his favorite subject after the seventies. He scoured the slums of Paris in search of picturesque subjects, but still continued, however, to paint portraits, many of which are masterpieces. His color and brushwork are fine. His later work is almost entirely pastel. His composition is daring and original; he does not hesitate to bisect figures, his stage pictures often showing nothing but the heads of the orchestra and the legs of the dancers. Nevertheless his work is very popular in America, where he paid a lengthy visit in 1873, as well as in France. The Luxembourg acquired, as a legacy from the painter Caillebotte, a number of his paintings, including the celebrated "Dancer on the Stage." Degas's pictures now command enormous prices. At the sale of the Rouart collection in 1912 his "Danseuses à la barre" was sold for 435,000 francs, the highest price ever paid in France for the work of a living master. Although Mary Cassatt was his only actual pupil, his influence on the younger generation has been very strong. For his life and works, consult: Liebermann (Berlin, 1899); Moore, in the *Magazine of Art* (London, 1900); Grappe, in *Kunst der Gegenwart* (Berlin, 1908); Lemoine, in *L'Art de notre temps* (Paris, 1912); Meier-Gräfe (Berlin, 1913).

DE GASPÉ, de gâs'pâ'. PHILIPPE AUBERT (1786-1871) A Canadian author. He was born in Quebec, was educated at the Seminary of that city, studied law, and was admitted to the bar. He became sheriff of Quebec, but fell into debt, for which he was for four years in prison. After his release he went to live on his inherited seigniorial lands at Saint-Jean-Port-Joli. In advanced years he wrote *Les anciens canadiens* (1862), a series of historical pictures (in the form of fiction) of the life and manners of the old régime in the Province of Quebec. His *Mémoires* (1866) narrate his personal recollections of contemporary persons and events with rare fidelity, skill, and discretion. See CANADIAN LITERATURE.

DEGEER, de-gâr', KARL BARON (1720-78). A Swedish entomologist, born at Fårspång. He was marshal of the household to the Swedish King and was chosen member of the Academy of Sciences at Stockholm. He is known as the author of a great work on the history of insects, entitled *Mémoires pour servir à l'histoire des insectes* (7 vols., 1752-78).

DE GEER AF FINSPÅNG, fën'spång. See GEEER AF FINSPÅNG, LOUIS GERIARD, BARON DE.

DEGENERACY (from *degenerate*, Lat. *degeneratus*, p.p. of *degenerare*, to degenerate, from *de*, down + *genus*, race). The definition given in 1857 by Morel is: "The clearest notion we can form of degeneracy is to regard it as a morbid deviation from an original type. This deviation, even if at the outset it was ever so slight, contained transmissible elements of such a nature that any one having in himself the germs becomes more and more incapable of fulfilling his functions in the world, and mental progress, already checked in his own person, finds itself menaced in his descendants." Morel uses the term to denote the congenital defectives, mental and physical. Degeneracy manifests itself in almost innumerable forms, among which

are deformed skulls, paralysis of members, atrophy of various organs, epilepsy, feeble-mindedness, idiocy. Anatomically speaking, the causes of these are certain lesions of the cerebrospinal axis.

The word "normal" should be understood as having a relative significance. The man is normal who is best adapted to his environment. The normal savage would soon find his way to the almshouse if suddenly transported to civilized life. In primitive life great variations from the normal are soon weeded out by the ruthless action of natural laws. The feeble-minded soon perish without opportunity of propagating their kind. In advanced society, with its higher regard for life, the defective has a chance to live and, if society is sufficiently careless, an opportunity to reproduce. Thus the Jukes, a notorious New York family, might have attracted no attention in a hunting society, but, living in New York in the nineteenth century, they cost the taxpayers millions of dollars besides the indirect harm of their presence and influence of their example. The individual loses power of adapting himself to changed conditions and sinks lower and lower. The question of degeneracy thus becomes of vital importance to society.

Certain forms of degeneracy are relatively of less social importance, as, e.g., minor physical defects, or those monomanias that find expression in strange beliefs, grotesque obsessions, great anguish concerning impossible conditions. Indeed, great deviations from the normal may be accompanied by unusual power in some line, as, e.g., the musical gifts of "Blind Tom." But these may vary, from such uncoordinated motor reactions as persistent movements of limbs or face to kleptomania, impulsions to suicide, and homicide. Here the public welfare is again at stake.

The greater degrees of degeneracy are represented by the idiot who merely vegetates. The higher centres are inoperative, the individual totally irresponsible. Among those whose mental functions are in evidence there are still certain physical stigmata. "The cunning look" of the criminal is proverbial. Lombroso and his followers have sought to classify criminals on this basis. The attempt has not wholly succeeded, but Z. R. Brockway, long superintendent of the Elmira Reformatory, has lately stated his growing conviction that criminals are not normal men physically. Society must in some way discover the line between the normal and responsible and the degenerate and irresponsible. It has become clear that there are born criminals, moral imbeciles. There is a difference between the erotic and the immoral man, the kleptomaniac and the thief, the homicide and the assassin. Not until these facts are understood will there be a scientific treatment of the individual who errs.

It is a great misfortune that a man should be born deaf, epileptic, or feeble-minded. It is something more than a misfortune if he is allowed to grow up and transmit his defects. When it is found that children of deaf parents are likely to be deaf, those of the epileptic to have epilepsy, and the offspring of the feeble-minded to resemble their parents, society must call a halt. Without any greater knowledge of the field than we now have, it is plain that this is the first step to take.

The immediate cause of degeneracy may be

either individual or social, though the final causes are often beyond our ken. In present society sexual immorality is a fruitful source of degeneracy. All attempts to regulate it have been futile. Of the effect of this vice there has been far too little study. In the best study extant, "The Jukes," Dugdale says: "Fornication, either consanguineous or not, is the backbone of their habits, flanked on the one side by pauperism, on the other by crime. The secondary features are prostitution with its complement, bastardy, and its resultant, neglected and miseducated childhood; exhaustion with its complement, intemperance, and its resultant, unbalanced minds; and disease with its complement, extinction." Another great cause is intemperance, though the extent of this is often overstated. "It is at once an effect and cause, a symptom and a source of degeneration." Laziness with its complement, idleness, is likewise a potent factor. Among social causes are enforced idleness, accident with its resultant loss of employment, dangerous employments, unhealthful housing conditions, producing weakness tending to dissipation and vice. These causes are perceptible, can be got at, and to a large measure be destroyed. The attempts of Nordau and others to class the genus with the degenerate have not succeeded. See DEGENERATION AS A FACTOR IN EVOLUTION, EUGENICS.

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DEGENERATION (Fr. *dégénération*, from Lat. *degenerare*, to depart from one's race, to degenerate, from *de*, away + *genus*, stock, race, family). In pathology, a term applied to certain tissue changes of a retrogressive character, which are associated with various conditions resulting from age, malnutrition, infectious diseases, poisons, etc. The degenerative process may assume several forms, which have been named from their special characteristics. Parenchymatous degeneration, or albuminous degeneration, is the type which most often accompanies the infectious diseases. While any of the cells of the body may be affected, those of the liver, kidney, and the epithelial cells of the mucous membranes suffer most frequently; the cells become swollen, more granular than normal, and may go on to disintegration. Fatty degeneration is the term used to designate a process by which the protoplasm of the cells of various organs is converted into fat droplets. Under certain conditions tissues, especially those in the walls of blood vessels, are converted into a homogeneous transparent substance; this form of degeneration is called either hyaline degeneration or amyloid degeneration, according to the microchemical reaction of the substance. Amyloid degeneration is also known as waxy or lardaceous degenera-

tion. The term "mucoid degeneration" is used to designate a form affecting both cells and intercellular substance, and in which the protoplasm is transformed into a translucent substance containing mucin. A similar condition in which the new material is more dense and firm is known as colloid degeneration. Under certain conditions granules of lime cells are deposited in the tissues and may be so abundant as to make the tissue hard and brittle or even bony; the condition thus produced is known as calcareous degeneration, or infiltration.

DEGENERATION AS A FACTOR IN EVOLUTION. The progressive development of organic forms is from the beginning attended by the modification of organs or of the organism, through lack of nutrition or disuse, resulting in physical degeneracy. We see everywhere throughout the plant and animal kingdoms this process of degeneration, this loss or reduction of parts of organs or entire organs. This is proved by the occurrence of so many vestigial organs or structures in the higher or more specialized plants, and especially animals, as compared with the stem forms, i.e., the ancestral or generalized forms from which they have apparently descended.

Indeed, there can be no specialization of form and structure without a corresponding reduction of the less useful neighboring parts by partial or total atrophy. To illustrate: The foot of the horse, so wonderfully adapted to the animal's mode of life, consists of a single digit, the other four having disappeared, with the exception of the two splint bones, which are the relics of two digits. Morphology and paleontology declare in unmistakable terms that the ancestral form from which the horse family has descended was a generalized form provided with five functional toes on each foot. See HORSE, DISUSE.

In groups of animals with a metamorphosis there are exceptional forms in which development is direct, the stages of development being abbreviated or suppressed; the organism may then be said to take a "short cut" to attain a growth on a level with its allies, who have traveled the long road of development by metamorphosis.

The evolution of almost every type, as well as the process of development of the embryo of most organisms, particularly of the more specialized animals, is a process of development of one part at the expense of another, i.e., hypertrophy, due to accelerated development, resulting from use or exercise and consequent increased nutrition; while adjoining parts, or less desirable or useful parts or organs, are allowed to remain stationary or lapse by atrophy. Adaptation seems not only to involve progressive evolution, but also degeneration. Thus there appears to be in the growth of the individual as well as in the development or evolution of the race or class, a competition or struggle for existence, at first between the cells and afterward between the different organs, especially those most concerned with the outer world or with competitive organic forms. The result is that the successful structures receive the most nourishment, while the less useful or favored languish and dwindle, becoming so many vestiges to tell the tale of defeat and death by atrophy.

This is exemplified in the case of such an animal as the lobster. In this animal and

throughout the class of Crustacea, of which it is a type, the wonderful diversity of form in the segments of which the body and limbs are composed, as well as the marvelous degree of specialization of body and limbs characterizing the thousands of species of the class, are due to the excess of development of one over adjoining parts. Thus the huge carapace or shield of the lobster is due to the excessive development of the upper or dorsal portion of two head segments, the corresponding parts or arches of 11 other segments of the cephalothorax having during the growth of the animal become completely lost or atrophied by the continuous pressure of the growing carapace.

The wonderful differences between the mouth parts of the caterpillar and the butterfly are due to the normal or, in some cases, excessive development of one pair of organs at the expense of others. Thus the mandibles of the caterpillar undergo atrophy in the changes of the chrysalis to the butterfly; the latter, taking no solid food, has entirely lost its mandibles, while the maxillæ forming the tongue are, by exercise in taking nectar, greatly developed, as in the butterfly and especially in the hawk moth.

So it is with man. As regards his brain and hands he is the most specialized of mammals, but as concerns his feet he is plantigrade, showing a tendency to loss of his little toe by atrophy, while already in the higher race he loses his wisdom teeth soon after they appear. Besides this he bears the vestiges of nearly 70 useless structures, among them the vermiform appendix, the most useless and positively dangerous of these relics pointing to his origin from some more generalized mammal.

The case is similar with the paddles of the ichthyosaurus, the plesiosaurus, and the whales. They are, at least in the last named, the result of modification by degeneration, resulting in adaptation to the medium inhabited. And so it is with the process of evolution of the birds, pterosaurs, and bats, and the modifications in the feet of the mole, and in the burrowing insects, climbing lizards, mammals, particularly the lemurs, and the thumbless monkeys.

There are four chief forms of degeneration:

- (1) degeneration during the growth of the individual, and the phylogeny of the race or class;
- (2) degeneration of the individual, more or less total;
- (3) social and institutional degeneration, often affecting whole peoples, due to slavery, and to mental, moral, and pathological causes;
- and (4) individual moral degeneration in the human races, resulting in the production of mental degenerates and criminals. It is worthy of observation that the occurrence of atrophy, of degeneracy in man, is nearly everywhere foreshadowed in the rest of the organic world, where it is a normal process, and the necessary complement of progressive evolution.

The death or elimination of the individual member which has become useless or out of harmony with its physical and social environment is also in the course of nature. When once lapsed by atrophy, an organ or part of an organ can never, as a rule, be restored; there are a few exceptions, e.g., that of the pigment of a blind *Proteus* subjected to light, and the organs of certain plants. The process of degeneration may at an early stage be arrested, but after a certain stage resumption of the original normal structure becomes impossible. Were it not so, evolution would be vastly less

progressive than it has been, and the world would be crowded more densely than now with degenerates.

The immediate causes of degeneration are lack of nutrition, disuse, and change of habit and instincts, so that an organ or set of organs are thrown out of use. Atrophy, also, as stated by Demoor, may arise from lack of space, as seen in the reduction in the number of teeth in man compared with lemurs and platyrrhine monkeys, these having six grinding teeth, while man has but five, due to a reduction in the size of the jaw.

Not only do we observe sporadic cases of degeneration, but also species and genera, as well as families, are made up of forms in different stages of degeneration. All parasites, entire classes, as that of sponges, and two classes of worms, as the Trematoda and Cestoda, the crustacean class Cirripedia or barnacles, and the parasitic fish lice, as well as the parasitic isopods (Bopyridæ), and many insects owe their characteristics to degeneration, while the great order of Diptera are all highly modified by the atrophy of certain parts, their most obvious features being the reduction of the second pair of wings so as to form the "balancers." (See FLX) The forerunners of the true vertebrates, the tunicates, afford a notable instance of the retrogressive development of an entire class.

Enough has been said to show how very general throughout the animal kingdom is modification by partial or total atrophy. The study of animals thus affected throws a flood of light on the factors and causes of progressive evolution.

In mankind degeneration on a wholesale scale is observed in the effects of slavery and of the slave trade in Africa, where it has been carried on for centuries, and on the master races. The result is that the white race is in a degree pulled down or deteriorated. A parallel is observable in ant societies, where the service rendered by the enslaved tends to disuse and atrophy in the masters.

In the social evolution of man the joint work of Demoor, Massart, and Vanderville gives a multitude of facts proving that, as among organisms in general, so in human societies, evolution is at once progressive and retrogressive. Existing social forms have during the process of change and modification lost some parts of their structure, and this process of degeneration cannot be regarded as a return to the primitive condition of man. Thus, (1) an institution which has once disappeared in the course of human development never reappears; also, (2) an institution once reduced to the condition of a vestige cannot be reestablished and resume its former functions; (3) neither can it assume fresh functions. While in the organisms below man degenerative evolution is brought about by a limitation of nutriment, in sociology the cause is a limitation in capital or labor. An institution which has ceased to be functional or useful may survive. These survivals exist here and there, and as Houzeau has said, "it is to be expected that living and superior civilizations drag behind them a trail of débris from dead civilizations." All this has the most significant bearing on human degeneracy and the study of criminology, especially as to the existence of those pathological, mental, and moral degenerates that appear to live only to afflict struggling humanity.

There are degenerate races, as the Austrians, a probable branch of the Dravidian stock of India; the Gypsies, a broken down low-caste Indian people; the Fugians, a tribe segregated from the American Indian race. There are also scattered through the most highly developed civilizations physical, mental, and moral degenerates, of which families like that of the James brothers of Missouri, the Jukes of the State of New York, or assassins like Booth, Guiteau, and certain Nihilists are examples.

Bibliography. E. Ray Lankester, *Degeneration* (London, 1880); J. Demoor, J. Massart, and E. Vanderville, *Evolution by Atrophy in Biology and Sociology* (New York, 1899); Morel, *Traité des dégénérescences physiques, intellectuelles, et morales de l'espèce humaine* (Paris, 1857); E. S. Talbot, *Degeneracy: Its Causes, Signs, and Results* (New York, 1898). See DEGENERACY and consult the works there referred to.

DEGER, dâ'gër, ERNST (1809-85). A German religious painter. He was born at Bockenheim, near Hildesheim; studied first at the Berlin Academy under Wach, and then under Schadow at Düsseldorf. Deger was the leader of the Düsseldorf religious painters, who imitated the so-called Nazarenes (see PRÆRAPHILITES). He showed more true feeling for beauty and color and less affectation than the contemporaries of his school. In 1837 Count Fürstenberg intrusted him with the decoration of the newly built church of St Apollinaris, near Remagen on the Rhine, of which he painted the frescoes in the choir, considered the greatest achievement of the Düsseldorf school in that field. They include the "Crucifixion," the colossal figure of the Redeemer, with the Madonna and John the Baptist on either side, and scenes from the life of Christ. Deger was next commissioned by King Frederick William IV to decorate the chapel in the castle of Stolzenfels, near Coblenz, where he painted 12 frescoes, representing the fall of man and the redemption. After 1869 he was professor at the Düsseldorf Academy. His last important work was "The Resurrection," in the Maximilianum, Munich.

DEGERANDO, de-zhâ'rân'dô', JOSEPH MARIE, BARON (1772-1842). A French philosopher, born in Lyons. In 1797 he went to Paris, whence after the 18th Fructidor he fled to Germany. After his return he was Secretary General in the Ministry of the Interior in 1804, and a Councilor of State in 1811. His *De la génération des connaissances humaines* (1802) was crowned by the Academy of Berlin, and his *Histoire comparée des systèmes de philosophie* (2 vols., 1806-07) remains one of the most important of French works on the subject. His *De la bienfaisance publique* (4 vols., 1839) should also be mentioned as among the most elaborate treatises on poor relief.

DEGGENDORF. A town of Lower Bavaria, Germany, situated on the Danube, 30 miles northwest of Passau (Map: Germany, E 4). It is a manufacturing town with woolen mills, breweries, tanneries, and corn mills, and is a busy corn and cattle market. Its chief points of interest are the church of the Holy Sepulchre, built 1337, a pilgrim resort, the scene of reputed miraculous cures, and a Gothic rathaus built in 1535. Pop., 1900, 6843; 1910, 7478.

DE GOEJE, dâ go'ye, MICHAEL JAN (1836-1909). A Dutch Arabist. He was born at

Dronryp, Friesland, and was a pupil of the distinguished Arabic scholar Dozy at the University of Leyden (1854-60). In 1866 he was appointed to the professorship of Arabic at the University of Leyden, and from 1862 to 1878 was prominently engaged as an inspector of schools and promoter of education in Holland. He was editor of a new edition of *Tabari*, and continued the catalogue of Oriental manuscripts begun by Reinhart Dozy. De Goeje was generally regarded as the greatest Arabic scholar of his generation in the western world. Among his numerous publications are the following: *Jakubi*, a description of Africa and Spain; *Beladhori*, a history of the conquest of Syria; the geographical works of Istakhri, Ibn Haukal, Mokaddasi, Ibn al-Fakih, Ibn Khordadbeh, Ibn Rosteh, and al-Masudi (in the *Bibliotheca Geographorum Arabicorum*, 1870-94); the *Diran* of the poet Moslem Ibn al-Walid; *Biographie de Reinhart Dozy* (trans. by Chauvin, 1883); "A Contribution to the History of the Gypsies," in proceedings of *Koninklijke Akademie van Wetenschappen*, Eng. trans. by Snyders (London, 1886). Consult *Untersweg*, *Michael Jan de Goeje* (Graz, 1909), and Snouck Hurgronje, *Levensbericht van Michael Jan de Goeje* (Amsterdam, 1910).

DÉGRAS, dâ grâ'. A wool grease obtained in the process of oil tanning of skins and hides and also from the waters used in wool scouring. See LEATHER.

DE GRASSE, de grâs', COUNT. See GRASSE, COUNT DE.

'DEGREE' (in mathematics). See ANGLE, 'IRCLE.

DEGREE. An academic rank or title, originating in the mediæval universities. Scholastic distinctions of an analogous nature seem to have existed in ancient times. The ancient Greek doctors or teachers of the law (*nomodidaskaloi*) and the scribes of the Jews were products of an organized educational scheme and possessed privileges similar to those conferred by the degree of a teaching doctor in the Middle Ages. In the latter part of the classical Greek period education was well organized into inferior and superior courses, and there evidently existed some recognized proof that such courses had been completed. Greek educational institutions and practices were imitated by the Romans, and Constantinople, Alexandria, and Rome vied with Athens in the support of schools offering elaborate and definite courses of study, the completion of which carried certain distinctions comparable to the modern degree. Historically, however, there is no connection between them. The degree as a university distinction originated at Bologna and Paris during the twelfth century, and, as the titles "master" and "doctor" imply, signified at first nothing more than a license to teach. Thus, at the University of Paris in its earliest days, the instructors taught by virtue of a *licentia docendi* issued by the chancellor of the cathedral on the Ile de la Cité. This gave them the right to the title of master, the advance from their previous academic rank of bachelor being symbolized by the ceremony of placing the *biretta*, or cap of office, upon their heads by their former instructors.

Of the different university degrees, that of master came first in point of time, being conferred in the twelfth century by the various faculties of the universities in both France and

Italy. The title "doctor," as an honorary distinction, is not infrequent at this time, usually coupled with some qualifying word: e.g., Thomas Aquinas, Doctor Angelicus. For some time, however, the titles of master, doctor, and professor were used indiscriminately. In the fifteenth century the doctor's degree had quite generally replaced the master's in the faculties of law, medicine, and theology, while the master's degree still held its own in the faculty of arts. In the fourteenth century, when many universities began to be founded by virtue of special *privilegia* granted by pope or emperor, the right to bestow the doctor's degree was often specifically granted and in some cases was withheld. Usually, however, the founding of a university implied the right to confer degrees. Both the Pope and the Emperor had the power to confer the honorary title of doctor, or to delegate this power to others, and the doctors thus created were known as *doctores bullati*, in distinction from the *doctores rite promoti*, those who had successfully undergone the test of the disputation. A candidate for a degree was required to prepare and read a Latin thesis, which he had to defend against a doctor of the faculty, three opponents specially appointed, and, as the phrase ran, "against all comers." Disputations, which formed one of the most brilliant and picturesque features of mediæval university life, continued down to a comparatively late period. In England they were not wholly done away with until 1860. The degree of bachelor was first brought into use in the thirteenth century, at the University of Paris and elsewhere, to designate students who had passed certain preliminary tests. In the faculty of arts, where the term of study was shortest, it was of comparatively little importance. In Paris, in the fifteenth century, the required period was four years in the faculty of arts, seven years in law, eight in medicine, and 14 in theology; and in these longer courses the preliminary degree conferred certain valuable privileges. The later history of degrees varies somewhat in different countries. Thus, in Germany the doctorate is practically the only degree conferred by universities and has been extended to other faculties than philosophy, which is the most common. In France the *baccalauréat* in letters and science is not a degree conferred by the university in the technical sense, but is obtained on completing a course corresponding largely to that of secondary schools elsewhere. In Scotland the first university degree is the M.A., the ancient tradition thus being retained. In the English universities the three degrees—bachelor, master, and doctor—are found. The doctor's degree is, however, not frequently obtained in course, the majority of those holding it being in the field of medicine, science, music, or theology.

Degrees in the United States. At the present time there is a regrettable lack of uniformity throughout the whole system of degrees granted by institutions of learning in the United States. Institutions claiming the right to confer university degrees have multiplied so rapidly within recent years, and there is frequently so wide a disparity in their standards, that the value of a degree is a highly variable quantity. To some extent, however, there is a tendency towards uniformity of standards, a movement fostered by numerous college and university associations and by such bodies as the Carnegie Foundation (q.v.). In general, it may be said that the lowest, or

bachelor's degree, stands for four years of college work; that the second, or master's degree, is granted after not less than one year of specialized study in a graduate department; and that the doctor's degree is bestowed after two or three years of specialized study and the preparation of a thesis upon some subject approved by the faculty. Even among the older universities and those of the highest standards there is considerable divergence in the significance of the several degrees. That of A.B., for instance, no longer stands, as it once did, for a definite amount of Latin and Greek and mathematics. The steady growth of the elective system and the tendency to substitute modern languages for the classics have forced upon the universities the alternative of either changing the requirements for the degree or else conferring a different degree in place of it. Latin and Greek are still required subjects for the A.B. degree at Ohio University, University of Vermont, Princeton, Rochester, Syracuse, Amherst, Franklin and Marshall, and Lafayette, while Latin is still required in many of the Southern colleges and universities, and Western Reserve, Mount Holyoke, Bates, Williams, Pennsylvania, and a few others. The tendency is more and more to extend the elective system, to recognize the value of new subjects, and, if any subject is to be prescribed, to select English. Most American colleges offer several parallel courses, leading to the degrees of A.B., B.L., B.P., and B.S., and in these institutions there are usually corresponding master's degrees—M.A., M.Lit., M.Ph., and M.S. In the faculties of medicine, law, and theology there is not the variety of degrees found in the faculties of philosophy and science. The medical schools regularly grant the doctor's degree alone, while the divinity and law schools usually give only the bachelor's degree. The higher legal degrees, however, are granted by just a few law schools, such as Yale, which confers the degrees of LL.M. and D.C.L. as the result of certain required studies, and the University of Chicago, which already confers the degree of J.D. The indiscriminate and ill-advised bestowal of honorary degrees is another cause that contributes to lessen the value of American degrees. Not only those degrees which are properly honorary, such as the D.D. and LL.D., are often bestowed by smaller colleges upon insufficient grounds, but other degrees which should regularly be won only by a definite course of study are conferred as honorary degrees, such as the Ph.D., the M.A., and even the bachelor's degree. Recently, however, a reaction has set in, and steps are being taken to check the granting of degrees out of course excepting such as are generally recognized as honorary degrees. See BACHELOR'S DEGREE; DOCTOR; DOCTORS OF THE CHURCH; ELECTIVE STUDIES. MASTERS OF ARTS; UNIVERSITY.

LIST OF THE MORE USUAL DEGREES

- A.A., Associate of Arts
- A.B. or B.A., Bachelor of Arts.
- A.M. or M.A. (*Artium Magister*), Master of Arts
- B.C.L., Bachelor of Civil Law
- B.D., Bachelor of Divinity
- B.L. or Litt.B., Bachelor of Letters
- B.L.L. or LL.B. (*Legum Baccalaureus*), Bachelor of Laws.
- B.P., B.Ph., or Ph.B., Bachelor of Philosophy.
- B.S. or B.Sc., Bachelor of Science
- C.E., Civil Engineer.
- C.M. (*Chirurgia Magister*), Master in Surgery
- D.C.L., Doctor of Civil Law.
- D.D., Doctor of Divinity.
- D.Litt. or Litt.D., Doctor of Literature.
- D.M., Doctor of Medicine (Oxford).

D.M.D. (*Dentaria Medicina Doctor*), Doctor of Medical Dentistry.
 D.V.M., Doctor of Veterinary Medicine.
 D.S. or D.Sc., Doctor of Science.
 E.E., Electrical Engineer.
 J.D. (*Juris Doctor*), Doctor of Law.
 J.U.D. (*Juris Utriusque Doctor*), Doctor of Civil and Canon Law.
 L.H.D., Doctor of Letters, or Humanities.
 LL.B. (*Legum Baccalaureus*), Bachelor of Laws.
 LL.D. (*Legum Doctor*), Doctor of Laws.
 LL.M. or M.L. (*Legum Magister*), Master of Laws.
 M.B. (*Medicine Baccalaureus*), Bachelor of Medicine.
 M.C.E., Master of Civil Engineering.
 M.D. (*Medicina Doctor*), Doctor of Medicine.
 M.M.E., Master of Mining Engineering.
 M.S.B., Bachelor of Music.
 Mus.D., Doctor of Music.
 Ph.D. (*Philosophia Doctor*), Doctor of Philosophy.
 Ph.G., Graduate in Pharmacy.
 V.S., Veterinary Surgeon.

The origin of a special costume to designate members and graduates of universities is obscure and probably was not in the first instance at all formal or conscious, but a mere adaptation of monastic costume. In the days when it was first used long and flowing robes were commonly worn by all classes of people, the university, like the Church, only preserved a tradition which died out in the world. The advantages of a distinctive costume were probably recognized at an early date. Two of the most obvious are the equalization of rich and poor under a simple uniform gown, and the provision of a means of identifying students. This latter view probably counts for something in the rule still in force at Oxford and Cambridge, which forbids undergraduates to appear in the streets without academic costume in the morning or evening. Gowns were at first all black, but distinctions of social rank were later expressed by them, and the sons of noblemen in England were permitted in the thirteenth century to wear gowns of any color. A skullcap was allowed to ecclesiastics to protect the tonsured head, and, except the hood, this is the only headdress recognized by early university statutes. This *pileus* soon assumed a pointed shape, and in this form was recognized as one of the insignia of the doctorate. The central point developed afterward into the modern tassel. Bachelors wore no official head-dress. The hood, which was worn by undergraduates until the sixteenth century, was originally attached to the gown, like the cowl of the monastic habit. Later it became a separate article of dress, which by its shape or color denoted the academic rank of the wearer. The English and Scottish universities have long maintained a definite system of hoods, which differ in each institution. Thus the bachelor's hood in Oxford and Cambridge is trimmed with white fur; the M.A. hood of Oxford is lined with crimson, and at Cambridge with white silk. the Oxford D.D. is of scarlet cloth lined with black, the Cambridge of scarlet lined with pink. the Oxford D.C.L. of scarlet cloth lined with crimson silk, the Cambridge LL.D. with pink silk. Clergymen who are literates—i.e., ordained without an academic degree—are allowed to wear a hood or tippet of plain black silk over their surplices. Gowns are not worn by undergraduates in the German universities—in fact, they are practically appropriated to the rector and deans of faculties and by them worn only on the most solemn occasions.

The wearing of cap and gown in America was comparatively rare until the last quarter of the nineteenth century. A movement towards a general adoption of a uniform system resulted in

the calling of an intercollegiate commission, which met in 1894 at Columbia College, under the chairmanship of President Low, Yale, Princeton, and New York University being also represented. Their report, made a year later, was adopted by many colleges, as offering a simple, adaptable, and intelligible system. It provides for three types of gowns and of hoods—for bachelors, masters, and doctors. The bachelor's gown has long pointed sleeves; the master's a long closed sleeve, square at the end, falling below the knee; the doctor's resembles the familiar pulpit or judge's gown, with full, round, open sleeves, and is faced with velvet, of which it also bears three bars on the sleeves. The two latter are of silk, the bachelor's of worsted stuff. These distinctions in gowns follow closely the English usage; the system of hoods is a piece of original constructive legislation, there being three distinct forms for bachelor, master, and doctor, lined with silk of the official colors of the institution granting the degree, and trimmed with velvet of the color that represents the department of learning in which it is conferred. The following are the colors used for this purpose: arts and letters, white; theology, scarlet; laws, purple; philosophy, blue; science, gold yellow; fine arts, brown; medicine, green; music, pink; pharmacy, olive; dentistry, lilac; forestry, russet; veterinary science, gray, and library science, lemon. In connection with this system it is customary for those who hold degrees from German universities to line their hoods with the colors of the university granting them, upon which is laid a German tri-chevron of black, white, and red. Consult H. Rashdall, *Universities of Europe in the Middle Ages* (Oxford, 1895); A. O. Norton, *Medieval Universities* (Cambridge, Mass., 1909); J. Wells, *The Oxford Degree Ceremony* (Oxford, 1906). See Colored Plate with article UNIVERSITY.

DEGREE OF LATITUDE. The distance along a meridian (q.v.) through which an observer must pass to alter his latitude (q.v.) by 1°, i.e., in order to see a star in the meridian 1° nearer to or farther from the zenith. The length of a degree must be calculated from data found by actual measurements on the earth's surface; and, owing to the earth being an oblate spheroid and not a sphere, it varies with the place of observation, the degrees being longer towards the poles, where the earth is flatter, and shorter at the equator, where the earth is more curved. If the earth were a sphere, a degree would have a constant length. As it is, a degree at the equator contains 362,756.5 feet, while at lat 40° it is increased to 364,283.7 feet. From a variety of observations conducted at various times and places, from as far back as the time of Eratosthenes (about 225 B.C.), tables have been constructed showing the length of degrees at different latitudes. The length of "the middle degree," as it is called, or that of places in lat. 45°, is 364,606.0 feet. The ascertained difference between degrees of latitude is one of the proofs of the earth's sphericity. See GEODESY.

DEGREE OF LONGITUDE. The distance between two meridians of longitude that make an angle of 1° at the poles, measured on the arc of a circle parallel to the equator. It is clear that this distance is greatest at the equator and becomes zero at the poles; and it can be shown that it varies with the cosine of the latitude,

if the earth be regarded as a sphere. The annexed table shows the lengths of a degree of longitude for every tenth degree of latitude from 0° to 70° and takes account of the earth's divergence from a spherical form.

Latitude	Length of degree in feet	Latitude	Length of degree in feet
0°	365,228.6	40°	281,173.5
10°	359,716.7	50°	235,232.3
20°	343,338.5	60°	183,079.8
30°	316,565.3	70°	125,290.4

DEGREES, LAMBETH. By Act of Parliament in the twenty-fifth year of Henry VIII sundry powers formerly belonging to the Pope were conferred upon the Archbishop of Canterbury, among which was the right of granting all the degrees taken in the universities of Oxford and Cambridge, and to this day he occasionally grants them, *honoris causa*. They are known as Lambeth degrees, from Lambeth Palace, London, his official residence.

DE GROOT. See HOFSTEDÉ DE GROOT.

DE HAAS, de hās, MAURICE FREDERICK HENDRICK (1832-95). A Dutch marine painter. He was born in Rotterdam and studied at the Academy there and later under Louis Meyer at The Hague. In 1859 he emigrated to New York, where he soon gained a high reputation. He was one of the original members of the American Society of Painters in Water Colors, in 1866, and in 1867 became an academician. His best-known American picture is "Farragut Passing the Forts." Some of his other pictures are "Storm Off the Isle of Jersey," "After the Wreck," "White Island Lighthouse," and "The Rapids Above Niagara." His treatment is vigorous though formal, and his effects are often brilliant.—His brother, WILLIAM FREDERICK (1830-80), settled in New York in 1854 and also distinguished himself as a marine painter. He painted "Sunrise on the Susquehanna," "Fish-Boats off Mount Desert," "Evening at Halifax," and "Narragansett Pier."

DEHISCENCE IN PLANTS. The opening of structures to discharge their contents: as, e.g., the opening of anthers to discharge pollen, the opening of spore cases to discharge spores, or the opening of fruits to discharge seeds.

DEHLI. See DELHI.

DEHMEL, dā'mel, RICHARD (1863-). A German poet, born in Wendisch-Hermsdorf, the son of a forester. He studied at the University of Berlin, where he edited student journals and took his doctor's degree in 1887 for a thesis on insurance. For the next eight years he was employed by the German Association of Fire Insurance Companies. He traveled in different parts of Europe in 1899-1902 and 1908. He wrote a novel, *Lebensblätter* (1895; 4th ed., 1909), some essays, *Betrachtungen* (3d ed., 1909), but his most distinctive work was in poetry, especially lyric, of the school of Lilien-cron. He has been styled a hedonistic Nietzschean. His writings were collected in a ten-volume edition (1906-09) and in a "popular" three-volume edition (1913); and a volume of selections appeared in 1905. The more important titles are: the symbolical *Erlösungen* (1891, 4th ed., 1906); *Aber die Liebe* (1893, 1896); *Der Mitmensch*, a drama (1895); *Weib und Welt* (1897; 4th ed., 1907). *Lucifer*, a

pantomime (1899); *Fitzbutze*, a juvenile written with his wife, Paula (1900; 15th ed., 1901); *Zwei Menschen*, i.e., man and woman (1903; 10th ed., 1908), an epic, in form derived apparently from French *vers libre*; *Der Kindergarten* (3d ed., 1909) and, also juvenile *Der Buntscheck* (5th ed., 1906); the erotic *Verwandlungen der Venus* (3d ed., 1907); *Michel Michael* (1911), a comedy which has been styled an attempt at a German *Peer Gynt*; *Schöne, wilde Welt* (1913), new poems and proverbs. Consult chap. iii of O. E. Lessing's *Masters in Modern German Literature* (Dresden, 1912) and Kunze, "R. Dehm-el," in *Westermanns Monatshefte*, December, 1913.

DEHN, dān, SIEGFRIED WILHELM (1799-1858). A German musical theorist, born at Altona. He became favorably known through his editions of the works of Orlando Lasso (*Seven Penitential Psalms*, 1838) and other early composers. He was custodian of the musical department of the Royal Library, Berlin, after 1842 and in 1849 was appointed professor. Among his numerous distinguished pupils in musical theory were Kiel, Glinka, Rubinstein, Cornelius and Theodor Kullak. His principal publication is the *Theoretisch-praktische Harmonielehre* (2d ed., 1858).

DEHODENCO, dā'ō'dānk', EDMÉ ALFRED ALEXIS (1822-82). A French genre, portrait, and historical painter, born in Paris. He studied at the Ecole des Beaux-Arts under Léon Cogniet and spent ten years in the East. His reputation rests principally upon his Spanish and Oriental pictures, and he is one of the most original of the group of French painters who treat such subjects. His pictures are notable for ethnographical accuracy, vivacity, and glowing color. In this genre are: "A Bull Fight in Spain" (1850, Pau Museum). "Gypsies on the Road" (1853); "A Jewish Fête at Tangiers" (1865, Poitiers Museum); "A Story-Teller of Morocco" (1878). After his return to France he painted his "October Morning" (1872), an attempt to treat a Parisian scene with the brush of an Orientalist. He also painted a number of portraits, including the painter Debras and Théodore de Banville, and scenes from French history, such as the intensely dramatic "Arrest of Charlotte Corday" (Louvre). Consult his *Biography* by Séailles (Paris, 1885).

DE HOND, PRIETER. See CANISIUS.

DEHORNING (a word of hybrid formation, from Lat. *de*, away from + Eng. *horn*). The practice of dehorning cattle has been in vogue in Europe and the United States for many years. From time to time there has been much controversy as to the advisability and alleged cruelty of the operation. Dehorning is quite generally advocated by all who have tried it. Special dehorning shears or clippers have been devised which enable the operator to remove the horns quickly and with a minimum amount of pain. The animals recover from the operation in a few days without serious loss of flesh or decrease in milk production. Dehorned animals are much less liable to injure one another, especially in transportation. Cattle with quarrelsome or vicious disposition are rendered docile and gentle. The operation should be performed in mild weather and not during periods of extreme cold or in fly time.

The growth of horn may be entirely prevented by the application of caustic potash to the horn button as soon as it can be discovered on the

calf's head, or about three or four days after birth. In applying caustic potash the hair should be clipped from the head so as to expose the developing horn. The latter may be moistened with ammonia, so as to dissolve the oily skin secretion. A stick of caustic potash should then be moistened in water and rubbed on the horn. The operation should be repeated until the horn becomes somewhat sensitive. The process requires only a few minutes. A scab forms over the treated surface, and falls off after a period of about one month, leaving a smooth poll on which the horns never develop.

DEHRA, dē'rá. The capital of a district of the same name in the United Provinces, British India, 75 miles east of Ambala (Map: India, C 2). It is picturesquely situated in a mountain valley at an altitude of 2300 feet. Its principal buildings are the seventeenth-century temple of Guru Ram Rai, founder of the town and also of a sect of Ascetics called Udasi; an Anglican church, and an American Presbyterian mission establishment. The town is the seat of district staff officers, of a government survey, and of a forestry school. It is also headquarters for the Imperial Cadet Corps. The city has no manufactures, but is a trade centre. Pop., 1901, 28,095; 1911, 38,610.

DE'IANTRA (Gk. *Δηϊαντρα*, *Dēianeira*). In Greek mythology, the daughter of (Eneus, King of Calydon in Ætolia, and of Althæa. She became the wife of Hercules (q.v.), who was victorious over Achelous in a contest for her possession, and bore him a son, Hyllus. She unintentionally caused Hercules' death.

DEI GRATIA, dē'i grā'shi-ā (Lat., by the grace of God). A formula found a number of times in the epistles of the New Testament. Pope Felix II, in 356, is said to have used *per gratiam dei episcopus*. It was formally used by the bishops at the Council of Ephesus in 431. Later it was commonly used by archbishops, bishops, abbots, and others in their correspondence. After the middle of the thirteenth century, when the sanction of the Pope was considered important for an ecclesiastical appointment, the higher clergy wrote *Dei et Apostolicæ Sedis Gratia* ('by the grace of God and of the apostolic see'). Other expressions were also used, as *Christi nomine*, *miseratione divina*, *permissione divina*, etc. In England the usage was largely dropped about the time of the Reformation. Occasionally, however, the archbishops of Canterbury and York used the form until the seventeenth century. The expression is said to have been used by temporal princes as early as the seventh century, but most of the documents with this formula have been proved to be forgeries. From the time of Charles the Great the form was commonly used by the Frankish kings. It was used by all the French kings, except Louis Philippe, from Louis VII to Napoleon III. Charles VII of France regarded the use of *Dei Gratia* as a royal prerogative and forbade its use by the Count d'Armagnac. The phrase is used on coins of many nationalities.

Consult Giry, *Manuel de Diplomatie* (Paris, 1894).

DE IMITATIONE CHRISTI. See KEMPTIS. THOMAS A.

DEINHARDSTEIN, dīn'härt-shtīn, JOHANN LUDWIG (1794-1859). A German dramatist, born and educated in Vienna. He was vice director of the Hofburg Theatre, Vienna, from 1832 to 1841, and editor of the *Jahrbücher der*

Litteratur from 1829 to 1851, during which period this publication counted among its contributors men like W. von Humboldt, A. W. Schlegel, Rückert, and Hebbel. His *Künstlerdramen* (2 vols., Leipzig, 1845), treating of the dramatic episodes in the lives of artists and actors, may be said to have established in some respects a new dramatic genre in Germany. Among his best plays may be mentioned *Hans Sachs*, *Floretta*, and *Garrick in Bristol*. His collected works were published in Leipzig (7 vols., 1848-57), under the title *Gesammelte dramatische Werke*.

DEI'NOTHERIUM. See DINOTHEBIUM.

DEI'OCES (Lat., from Gk. *Δειός*, *Deiōs*). According to Herodotus, i. 96 ff., the first ruler of the Empire of the Medes. After the Median revolt from Assyria he rose to be judge of his own village. The justness of his decisions won surrounding villages to him. Presently the Medes combined and made Deioeces King. For a criticism of this story, for the most part unhistorical, see the editors of Herodotus, e.g., How and Wells, vol. i, pp. 104, 383-384 (Oxford, 1912). He built Ecbatana and, changing his ways, ruled, in true Eastern style, by means of informers and spies.

DEIOT'ARUS (*Δειώταρος*, *Dēiotaros*). A tetrarch of Galatia in the first century B.C. He formed an alliance with the Romans against Mithridates, and so was made King by Pompey, 63 or 62 B.C. Armenia Minor was added to his domain. With several hundred horsemen he fought for Pompey at Pharsalus, in 48 B.C., and afterward fled with the latter. In 47 Julius Cæsar, then moving against Pharnaces (q.v.), pardoned Deiotarus, who had come to him as a suppliant. Several years later he was accused by his grandson Cæstor of aiding Cæcilius Bassus and of conspiring against Cæsar. He was defended by Cicero in the oration entitled *Pro Rege Deiotaro*, still extant. The result of the trial is not known. Deiotarus aided Brutus at the battle of Philippi and afterward sided with Octavius against Antony.

DEIPH'OBÈ. According to Vergil (*Æneid*, vi, especially 35-36), daughter of Glæucus and priestess of Apollo and Artemis, and the Sibyl at Cumæ who conducted Æneas to his father, Anchises, in the underworld.

DEIPH'OBUS (Gk. *Δηϊφωβος*, *Dēiphobos*). In Greek legend, the son of Priam and Hecuba and one of the bravest of the Trojan heroes. After the death of Paris he married Helen, and she, after the fall of Troy, gave him up to Menelaus, her former husband, by whom he was killed and mutilated.

DEIRA. An ancient kingdom of Britain, corresponding closely to the modern Yorkshire. It formed a part of Roman Britain, and the town of York was the capital and seat of the Roman prefect. Ælla, a chief of the Angles, took possession of Deira about the middle of the sixth century. There was constant strife between Deira and its northern neighbor, Bernicia, which delayed the full conquest of northern Britain. Æthelfrith of Bernicia drove out Ælla's son in 588 and united the two kingdoms under the name Northumbria. In 603 the forces of the North Britons were annihilated at the Degestan, and the rule of Northumbria was established from the Humber to the Forth. In 627 Christianity was accepted. Bernicia and Deira became separate kingdoms about 633, but were reunited in 651. Later Deira was a sepa-

rate kingdom under the Danes. It was a number of native prisoners of Deira, exposed for sale in the slave market at Rome, that attracted the attention of Gregory I and led to the Christianizing of Britain, according to the old legend.

DEIR-EL-BAHRI, dār el-bā'rē (northern convent). The modern Arabic name of a famous Egyptian temple near the site of the ancient Thebes (q.v.). It was built by Queen Hatshepsut (Hatsa), the sister and wife of Thothmes II, but was never completed. In Christian times it became a monastery, whence its modern name, and the reliefs adorning the walls were badly mutilated by zealous monks, who regarded them as remnants of heathenism. The temple was dedicated to the god Ammon of Thebes, and also contained chapels for the deities Athor and Anubis, as well as a funerary chapel for Queen Hatshepsut. It is built upon three terraces rising in successive steps from the plain, each containing a court with columned porticoes and other buildings. The principal buildings surround the upper court, at the rear of which is the sanctuary. The walls of the various halls and chapels are magnificently decorated with sculptures and paintings. In one of the halls is depicted the fleet sent by Queen Hatshepsut to Punt on the Somali coast. (See *EGYPT, History*.)

The site was examined by Mariette, and later Naville, acting under the auspices of the Egyptian Exploration Fund, cleared the whole temple of rubbish and explored it systematically. In 1881 no fewer than 39 mummies and coffins of kings and members of the royal house were found in a deep, rocky pit near Deir-el-Bahri and removed to the Bulak Museum. Among the mummies found were those of Seqenen-Rē, Amasis I, Amenophis I, Thothmes II, Thothmes III, Seti I, Ramesses I, and Ramesses II. In 1906, the year which marked the completion of the excavations of the eleventh dynasty temple on this site, a fine statue of a Hathor cow was found *in situ* in its shrine (consult *Egyptian Exploration Fund Memoirs*, 1907, frontispiece) and the fine temple of Mentuhetep was cleared out. In 1913 the expedition of the Metropolitan Museum of Art discovered the causeway to the latter temple. Consult: Mariette, *Deir-el-Bahri* (Leipzig, 1877); Dümichen, *Flotte einer ägyptischen Königin* (ib., 1868); *Egypt Exploration Fund Memoirs*, vols. xii-xiv, xvi, xix, xxvii, xxix, xxx, xxxii (London, 1894-1913); *Guide to the Temple of Deir-el-Bahr*, published by the Egyptian Exploration Fund (ib.).

DEIR-EL-KAMAR, el-kā'mēr, or DER-EL-KAMAR (Ar. monastery of the moon). A town of Syria and once the seat of Emir Beshir, the chief sheik of the Druses. It is built in terraces on the side of a steep hill in the glen of Mount Lebanon, at an altitude of over 2800 feet, about 13 miles from Beirut. The slope is devoted to cultivation of the vine and the raising of grain. The chief industry is the production of silk stuffs and embroideries. Pop., about 8000, chiefly Maronites. Deir-el-Kamar has been the centre of many conflicts between the Maronites and the Druses.

DEISM (Fr. *déisme*, from Lat. *deus*, god), or **THEISM** (Fr. *théisme*, from Gk. *theos*, *theos*, god). A term which properly means belief in a god, or opposed to atheism. In common language, however, deism is the belief in the existence and providence of God, grounded on the evidence afforded by reason and nature, rather than on testimony of a supernatural revelation.

The term "deists," or "freethinkers," is especially used to designate a school or series of writers who appeared in England in the seventeenth and eighteenth centuries, and who aimed to establish natural religion upon the basis of reason and free inquiry and to bring all positive or revealed religion to the test of this. The leading names in this school are: Lord Herbert of Cherbury (died 1648); John Toland, whose *Christianity Not Mysterious* (London, 1696) gave exact expression to the tendency of the deists; the third Earl of Shaftesbury; Anthony Collins (died 1729), the friend of Locke; Thomas Woolston; Matthew Tindal, the author of *Christianity as Old as the Creation, or the Gospel a Republication of the Religion of Nature* (ib., 1730); Viscount Bolingbroke. Consult: A. S. Farrar, *History of Free Thought* (ib., 1863); Leslie Stephen, *History of English Thought in the Eighteenth Century* (ib., 1881); Robertson, *Short History of Free Thought* (ib., 1906); Flint, *Anti-Theistic Theories* (Edinburgh, 1879).

DEISSMANN, dis'mān, GUSTAV ADOLF (1866-). A German New Testament scholar, born in Langenscheid, Nassau, and educated at the University of Berlin and the Herborn Theological Seminary. He entered the ministry in 1890, became a teacher at Marburg in 1892 and at Herborn in 1895, and was made professor at Heidelberg in 1897 and at Berlin in 1908. He lectured in Cambridge (England) in 1907 and at Upsala in 1910, and received the honorary degree of D.D. from Aberdeen (1906), St. Andrews (1911), and Manchester (1912). Among his valuable publications are *Die neutestamentliche Formel "in Christo Jesu"* (1892), *Bibelstudien* (1895, 2d series, 1897; Eng. trans., 1901-03); *Theologie und Kirche* (1900); *The Epistle of Pseudo-Sirius* (1902), *Die Hellenisierung des semitischen Monotheismus* (1903); *Evangelium und Urchristentum* (1905); *New Light on the New Testament* (1907); *Philology of the Greek Bible* (Cambridge Lectures, 1908); *Light from the Ancient East* (1910); *Urgeschichte des Christentums in Lichte der Sprachforschung* (1910); *St. Paul* (1912, in English, also in German and Swedish).

DEITERS, di'tērs, HERMANN (1833-1907). A German philologist and writer on music. He was born in Bonn. At first he studied law and for a short time followed it as a profession in Berlin, but returned to Bonn to study philology. He received the degree of Ph.D. in 1858. As a writer on music, he soon attracted attention, especially with his excellent essays on Brahms. In 1880 he published the first authoritative biography of the master, which was completed, after Brahms's death, in 1898. His most important work is the translation into German of A. W. Thayer's monumental biography of Beethoven (never published in the English original). Only the first three volumes were completed by Thayer; the fourth and fifth volumes were written by Deiters on the basis of the materials collected by Thayer.

DÉJAZET, dā'zhā'zā', PAULINE VIRGINIE (1797-1875). A celebrated French actress. She was born in Paris, Aug. 30, 1797 (some accounts say 1798). From the time she was five years old, when she began playing children's parts with marvelous precocity of intelligence and grace, till she was over 70, her career upon the stage was an almost uninterrupted success. After experience in several Parisian theatres

she went to Lyons and Bordeaux, where she won great popularity in soubrette rôles. Returning to Paris (1820), she played successively at the Gymnase, the Nouveautés, the Gaîté, and the Palais Royal, where she made some of her greatest hits in young men's parts. These, called rôles *tracés*, were so distinctive that they, together with her quick-witted soubrette rôles, came to be known as a class by themselves, *Déjazets*. Famous especially were her impersonations in *Les écoliers en vacances*, *La petite sœur*, *Le plus beau jour de la vie*, *Le fils de l'homme*, *Sophie Arnould*, *Frétillo*, and numerous others. After 1845 she played for a time at the Variétés and made successful tours abroad. In 1859, with her son Eugène, she undertook the management of the Folies-Nouvelles, then known as the Théâtre Déjazet. Here she brought out several of Sardou's earlier pieces, among them *Monsieur Garat* and *Les prés Saint-Gervais*. She retired from the stage in 1868, but appeared again even within a year of her death, which occurred Dec. 1, 1875. Countless stories are told of her brilliant wit and personal charm. Consult Duval, *Virginie Déjazet, 1797-1875* (Paris, 1876); Lecomte, *Virginie Déjazet: étude biographique* (ib., 1866); Mirecourt, "Déjazet," in *Les contemporains* (ib., 1854).

DEJEAN, de-zhân', JEAN FRANÇOIS AIMÉ, COMTE (1749-1824). A French general and statesman, born at Castelnaudary. He fought with distinction in the wars of the Revolution, rising successively to the rank of brigadier general and general of division. He was Minister of War from 1802 to 1809 and, after the first Restoration, was appointed governor of the Polytechnic School. Upon the return of Napoleon from Elba he rendered valuable services until after the battle of Waterloo. He was also at that time grand chancellor of the Legion of Honor and aid-de-camp of Napoleon.

DEJEAN, PIERRE FRANÇOIS AIMÉ AUGUSTE, COMTE (1780-1845). A French general and entomologist, son of the preceding. He was born at Amiens and took up the study of medicine, but soon entered Napoleon's army, with which he went to Spain and to Russia. In the army he attained the rank of a general of division and at Waterloo acted as adjutant to the Emperor. From 1815 to 1819 he was kept in exile by the Bourbons. Devoting all his leisure to science, Dejean made extensive collections of insects and contributed much to our knowledge of Coleoptera (beetles). He is the author of the following works: *Iconographie des coléoptères d'Europe* (1829-36); *Espèces générales des coléoptères* (1825-37); *Histoire naturelle et iconographie des coléoptères d'Europe*. The last-named work is still a standard on the subject of Coleoptera. The works were written by Dejean in conjunction with Boisduval and Aubé.

DEJERINE, de-zhe-rên', JULES (1849-). A French alienist, educated at Paris. In 1879 he became head of the medical clinic at the Charité Hospital, in 1893 took charge of the course in clinical medicine at the Necker Hospital, in 1895 became physician at the Salpêtrière, and in 1910 was appointed professor of the clinic of nervous diseases. He wrote on aphasia, especially attacking Pierre Marie's theory of the origin of this disease, and on many other topics connected with nervous diseases, and published: *L'Hérédité dans les mala-*

dies du système nerveux (1886); *Anatomie des centres nerveux* (1894), in collaboration with his wife, née Klumpke, herself a well-known neurologist; *Sémiologie du système nerveux* (1900); *Traité des maladies de la moelle épinière* (1902, with Thomas).

DE KALB. A city in De Kalb Co., Ill., 58 miles west of Chicago, on the Chicago and Northwestern, the Chicago, Aurora, and De Kalb, the Chicago Great Western, and the Chicago, Milwaukee, and Gary railroads (Map: Illinois, D 2). It is the seat of the Northern Illinois State Normal School and contains barbed-wire factories, wire-drawing and woven-wire mills, agricultural-implement works, piano, shoe, glove, mitten, nail, and creamery-package factories, etc. The government is administered by a mayor, biennially elected, and a municipal council. The city owns and operates its water works. Settled about 1838, De Kalb was incorporated in 1877. Pop., 1890, 2579; 1900, 5904; 1910, 8102; 1914 (est.), 9036. De Kalb was the scene of an engagement in the Black Hawk War. Here, after the battle, Lincoln, Davis, and Zachary Taylor held a conference.

DE KALB, BARON. See KALB, JOHANN, BARON DE.

DE KAY, CHARLES (1848-). An American author and critic. He was born in Washington and graduated at Yale University in 1868. He was associated with the New York Times as literary and art editor from 1876 to 1906 and with the New York Evening Post in 1907. In 1894 he was appointed Consul General of the United States at Berlin, where he remained until 1897. During his sojourn abroad he established the Berliner Fechtclub, after previously founding a similar society (the Fencers' Club) in New York (1882). Among the literary and art societies which he took part in founding are the Authors' Club (1882), the National Sculpture Society (New York, 1892), the National Arts Club (New York, 1899), and the Circle of Friends of the Medallion (1907). Of the National Arts Club he became the managing director. Among his numerous publications are the following: *Hesperus and Other Poems* (1880); *Vision of Nimrod*, a dramatic poem (1881); *Love Poems of Louis Barnevel* (pen name, 1883); *Life and Works of Barye, Sculptor* (1889); *Bird Gods* (1898); and translations of Heinrich Heine's *Letters* and of several works from the French.

DEKEN, dâ'ken, AGATHE (1741-1804). A Dutch poet and novelist, born at Amstelveen. Many of her works were written in collaboration with her friend Elizabeth Bekker. These joint productions include the novels: *Historie van Sara Burgerhart* (1782); *Historie van Willem Levend* (1875); *Brieven van Abraham Blankaart* (1787); *Historie van Cornelia Wildschut* (1793). Her religious songs show her to have been possessed of a truly pious nature, while her descriptive poems are fine characterizations of the folk life of Holland. Especially noteworthy are the collections entitled *Liederen voor den boerenstand* (1804) and *Liederen voor Kinderen*.

DEKKER, EDUARD DOUWES (1820-87). A Dutch writer, the author of *Maar Havelaar* (1860), the Dutch *Uncle Tom's Cabin*. He was born in Amsterdam, March 2, 1820. He went in 1838 to the Dutch Indian colonies and remained 18 years in government employ, endeavoring to

mitigate the evils of native government, and resigning in 1856 because his zeal clashed with government interest in Java. Then he made his appeal to the public conscience in *Max Havelaar*, revealing conditions of outrageous and inhuman extortion and making a great hit as a novel, but getting little sympathy and no redress for the victims. In 1866 he withdrew to Germany, where he published (in Dutch) a popular drama, *Vorstenschool* ('The School for Princes'); a novel, *La Sainte Vierge*; and several studies in political and social economy. He is well known by his pseudonym, Multatuli (Lat. *multa tuli*). The posthumous *Geschiedenis van Wouterje Pieterse* (1888), incomplete, was followed in 1892 by *Letters and Works*, ed. by his widow. Consult the biographies of Busken (in Ten Brink's *Hedendaagsche Letterkundigen*, 1885); Meerkesk (1900); also T. S. Abrahamsz, *Eduard Douwes Dekker: Eene zielegeschiedenis* (1888).

DEKKER, THOMAS (c.1570-c.1641). An English dramatist and pamphleteer. Little is known of him. He was born in London. His dramatic career began as early as 1597, and before his death he wrote, single-handed or in collaboration, more than 40 plays, most of them for Henslowe. In 1600 were printed two of his best comedies, *The Shoemaker's Holiday* and *Old Fortunatus*. The former is a sprightly play and acts well. The latter contains scenes and passages of very great beauty. Dekker had been writing the previous year in conjunction with Ben Jonson, but the two dramatists had now fallen out. In 1601 Jonson ridiculed Dekker in *The Poetaster*. Dekker replied with *Satiromastix, or the Unrissing of the Humorous Poet* (1602). Of the plays that Dekker wrote after that, the most powerful is *The Honest Whore* (two parts, 1st part printed 1604; 2d part, 1630), in the composition of which he was aided by Middleton. Other plays in which Dekker bore a hand are: *Black Bate-man of the North* (1598); *The Roaring Girl* (1611); *The Virgin Martyr* (1622); *The Witch of Edmonton* (first published 1658). He wrought with a realistic aim, describing the middle and lower strata of London life. He also wrote several noteworthy pamphlets, of which *The Gull's Hornbook* (1609) is the best extant account of the London gallants. Other pamphlets deal with thieves and vagabonds; another, *The Wonderful Year* (1603), describes London suffering from the plague. Consult: *Dramatic Works*, ed. by Shepherd (4 vols., London, 1873); *Plays* (selected), ed. by Rhys (ib., 1887); *Nondramatic Works*, ed. by Grosart (5 vols., ib., 1884-86); the "Life" by Bullen, in the *Dictionary of National Biography*; Penniman, *The War of the Theatres* (Boston, 1897); Pierce, *The Collaboration of Webster and Dekker* (New York, 1909); Hunt, *Thomas Dekker* (ib., 1911).

DE KO'VEN, (HENRY LOUIS) REGINALD (1861-). An American composer of songs and light operas, born in Middletown, Conn. When 11 years old, he was taken to Europe, where he received his education. He graduated from St. John's College, Oxford, in 1879. After he had been instructed in the usual musical grounding branches by Speidel, Lebert, and Pruckner, in Stuttgart, and by Hauff in Frankfurt, he took a course in vocalization with Vannucini in Florence and courses in light-opera composition with Gené, von Suppé, and De-

libes. On his return from Europe in 1882 he took up his residence in Chicago, but subsequently moved to New York. From 1902 to 1904 he lived in Washington as conductor of the Washington Symphony Orchestra. He then returned to New York as musical critic of the *World*. His scores are melodious and show refinement of instrumental coloring and harmony. His greatest success has been *Robin Hood* (1890), a thoroughly delightful work of its kind. Others among his light operas are: *The Begum* (1887); *The Fencing Master* (1892); *Rob Roy* (1894); *The Highwayman* (1897); *The Three Dragoons* (1899); *Foxy Quiller* (1900); *Maid Marian* (1901); *The Student King* (1906). He also composed many songs, several of which have become well known.

DELABARRE, dell'a-bär', EDMUND BURKE (1863-). An American psychologist, born at Dover, Me. He was educated at Brown University, Amherst College, Harvard, and Freiburg, and, beginning in 1891, was associate professor and then (after 1896) professor of psychology at Brown. In 1896-97 he was also director of the Harvard Psychological Laboratory during the absence of Professor Munsterberg. He was elected a fellow of the American Association for the Advancement of Science. He is author of *Ueber Bewegungsempfindungen* (1891) and *Report of Brown-Harvard Expedition to Nachvak, Labrador, in 1900* (1902).

DELABARRE-DUPARCQ', de-la'bär' dy-pärk', NICOLAS EDOUARD (1819-93). A French military critic and historian, born at Saint-Cloud, Seine-et-Oise. He studied at the Ecole Polytechnique and in 1849 was appointed professor of military history at the College of Saint-Cyr. Having entered the engineers in 1841, he rose in 1871 to the rank of colonel and was retired in 1879. He wrote, in addition to memoirs for the Academy of Moral and Political Sciences, *Biographie et maximes de Maurice de Saxe* (1851); *Portraits militaires, Esquisses historiques et stratégiques* (2 vols., 1853-55); *Les chefs de guerre* (1867); *Histoire de Henri IV, roi de France et de Navarre* (1884).

DE LA BÈCHE, de la bâsh, SIR HENRY THOMAS (1796-1855). A distinguished British geologist. He was born near London and educated at the military school at Great Marlowe. He entered the army in 1814, but soon retired from public service to take up the study of science. For several years he traveled through England, France, and Switzerland, examining the geological formations and gaining a knowledge of mineralogy and petrography. His researches were the bases of frequent contributions to the *Transactions of the Geological Society*, in which he displayed great scientific ability. He was the first to conceive the plan of making a detailed geological map of England, a task he commenced upon his own responsibility; in 1832 the expense of this work was assumed by the government, and De la Bèche was appointed director. He labored for many years to establish the survey on a successful basis, and he was also concerned in founding a geological museum and a school of mines in London. The list of his publications includes many books recognized as standard works of reference and numerous papers contributed to scientific journals: among the more important are the following: *Manual of Geology* (1831); *Researches in Theoretical Geology* (1834); *Report on the*

Geology of Cornwall, Devon, and West Somerset (1839); *On the Formation of the Rocks of South Wales* (1846); *Geological Observer* (1853). De la Bèche was elected president of the Geological Society of London in 1847, and in 1855 he received the Wollaston medal from the same society. His distinguished services were also awarded by the bestowal of knighthood and by numerous marks of honor from foreign societies.

DELABORDE, de-là'bôrd', HENRI, COUNT (1811-99). A French art critic and historical painter, born in Rennes, son of Count Henri François Delaborde. He studied for some time in Paris with Delaroche and afterward produced historical pictures of a rather conventional classical type. Among them are: "Hagar in the Desert" (1836, Dijon Museum); "St. Augustine" (1837); "The Knights of St. John of Jerusalem" (1845), at Versailles. He also painted frescoes in the church of St. Clotilde, Paris. But he is known principally as a critic of art. Besides his writings, as perpetual secretary of the Académie des Beaux-Arts, he contributed to the *Revue des Deux Mondes* and other periodicals. These articles have been collected as *Mélanges sur l'art contemporain* (1866) and *Etudes sur les beaux-arts en France et en Italie* (1864). He published, among other volumes, *Ingres, sa vie, ses travaux, sa doctrine* (1870); *Lettres et pensées d'Hippolyte Flandrin* (1865); *Gérard Edelinck* (1886); *La gravure* (1882); *La gravure en Italie* (1883); *Marc Antoine Raimondi* (1887); *Les maîtres florentins du XV siècle* (1889); *L'Académie des Beaux-Arts depuis la fondation de l'Institut de France* (1891). He was elected to the Institute in 1868 and was conservator of the department of prints in the National Library, Paris, from 1855 to 1885.

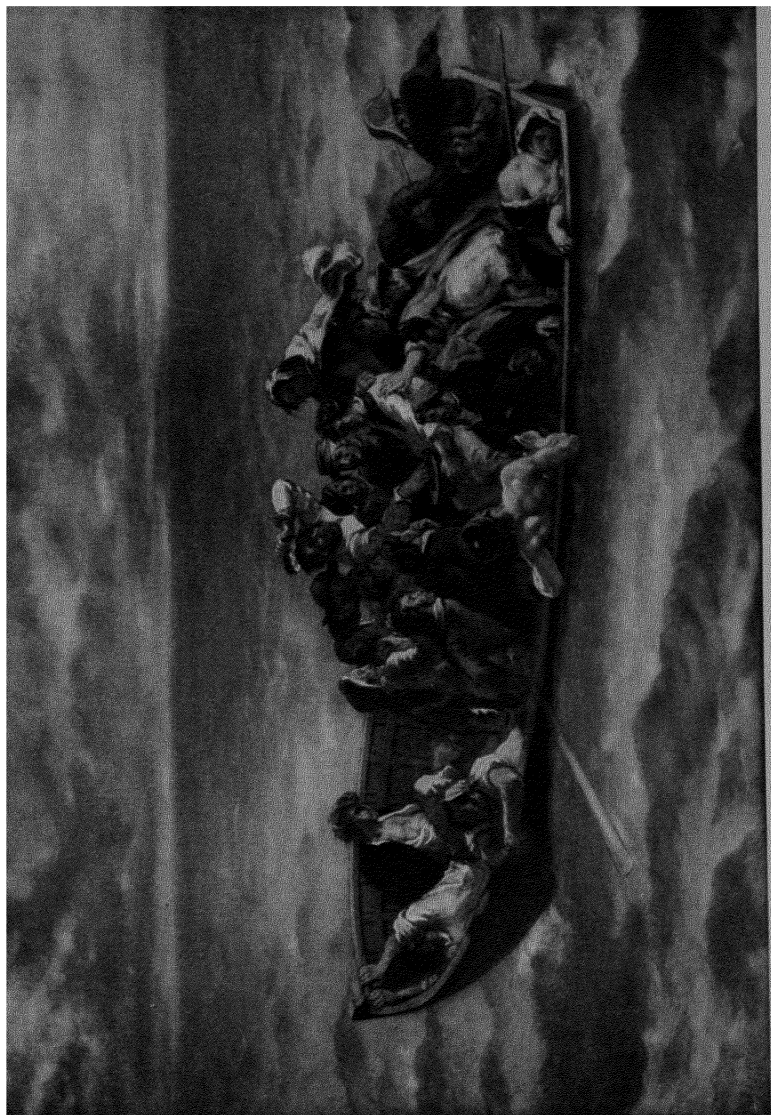
DELABORDE, HENRI FRANÇOIS, COUNT (1764-1830). A French soldier, born in Paris. He successively became a brigadier general, chief of staff, and commander in Corsica. As a general of division, he conducted the campaigns in the Pyrenees (1794) and on the Rhine. In 1812 he was a general of division in Mortier's "Jeune Garde," which fought so gallantly in the Russian campaign. Upon the return of Napoleon from Elba he again espoused the cause of the Emperor. With the advent of the Restoration he was brought before a military tribunal (September, 1816), but was acquitted.

DELACROIX, de-là'krwä', (FERDINAND VICTOR) EUGÈNE (1798-1863). One of the most important French painters of the nineteenth century, the chief leader of the Romantic school; also a lithographer and etcher. He was born at Charenton-Saint-Maurice, near Paris, April 26, 1798. Under the Directory his father had been Minister of Foreign Affairs and had held other offices of honor. He mismanaged the family property, and the son had to struggle hard for an existence. At 18 he entered the studio of Guérin, and there became the friend of Géricault, who greatly influenced him; but his chief teachers were the old masters of the Louvre, whom he diligently copied. Joining Géricault in the new Romantic movement, he became, after the latter's death, its recognized leader. He first exhibited in 1822 the "Bark of Dante," which, although fiercely attacked by the critics, made a great impression, was purchased for the Luxembourg Gallery, and is now in the Louvre. His "Massacre of Chios," exhibited in 1824 and now in the Louvre, caused

an even greater sensation. Indeed, it may be termed a manifesto of the new Romantic school. The types were individual and characteristic instead of general and typical, as in the Classic school. The old ideas of composition were altogether disregarded, and the scene portrayed was one of gloomy horror and pathos. The painter was accused of worshipping the hideous instead of the beautiful, and his picture was dubbed "The Massacre of Painting." Its sale, however, enabled him to visit England in 1825 and further to increase his knowledge of the English colorists, by whom he had already been influenced. During this visit he acquired his lifelong fondness for English literature, especially for Byron, Scott, and Shakespeare, whom along with Goethe he preferred to the classic authors of his own country. In 1832 he was sent as a member of an embassy to Morocco, and he also visited Spain and Algiers. These travels enriched his palette with bright colors, and his Oriental subjects brought him great popularity. Nevertheless he was unfortunate in selling his pictures and would have been in uncomfortable circumstances had he not received frequent commissions from the government after the revolution of 1830. He was selected to execute mural paintings in a number of public buildings and distinguished himself as much in this task as he had previously done in his canvases. A member of the Academy in 1857, he exhibited his last picture in 1859 and died in Paris on Aug. 13, 1863. His life was solitary and nearly all spent in his studio. He suffered much from ill health, which only urged him to greater exertions. He was of a refined and sensitive disposition and was deeply wounded by the bitter controversies which his pictures provoked.

Delacroix was one of the greatest painters of the nineteenth century and one of the greatest colorists of all times. His work has often been compared with that of Rubens, who exercised great influence upon him. His coloring is bright, but simple, the primary colors being chiefly used, and he is fond of obtaining color effects by placing complementary colors together. He has been criticized as being deficient in drawing, perhaps justly, although his surviving drawings reveal an excellent draftsman, and, when he sacrificed the distinctness of outline to color, he did it knowingly, as the greatest colorists have done before him. His art is impetuous and intensely dramatic, and he delights in passion and in motion. His activity extended over an immense variety of subjects; he painted everything—saints, warriors, lovers, animals, flowers, the ocean—and all equally well. He ransacked history and literature for subjects, but always rendered them as a painter in his own great language of color.

In his long career he produced some 853 oil paintings and 1525 water colors and pastels. Among his chief historical works, besides those mentioned above, are: "Hellas Mourning over the Ruins of Missolonghi"; "Milton and his Daughters"; the "Death of the Bishop of Liège," after Scott's *Quentin Durward* (Louvre); the "Entry of the Crusaders into Constantinople"; "The Barricade," a scene from the July Revolution (Louvre), which secured him the cross of the Legion of Honor; "The Abduction of Rebecca" (Metropolitan Museum). Among his Oriental subjects are: "Algerian Women" (Louvre); the "Convulsionaries of Tangier"; the "Jewish Wedding in Morocco." He also



EUGENE DELACROIX
"THE BARK OF DON JUAN," FROM THE PAINTING IN THE LOUVRE, PARIS



EUGENE DELACROIX
"THE BARK OF DON JUAN," FROM THE PAINTING IN THE LOUVRE, PARIS

portion is protected by the Inyack peninsula and island and forms there a safe and ample anchorage. Delagoa Bay receives the waters of several rivers—the Maputu, the Umbelosi, the Crocodile, the Umfusi. The coasts are low and covered with mangrove forests. The commercial importance of Delagoa Bay is very considerable, owing to the fact that it contains the port of Lourenço Marques, which is connected by rail with Pretoria (since 1895), thus affording an outlet for the output of the gold fields of the Transvaal. The imports of Lourenço Marques amount to approximately 5 million dollars annually, chiefly foodstuffs, manufactures, and machinery, of which a large part pass thence to Pretoria. The railway from Lourenço Marques to Pretoria was constructed by a company of American and English capitalists and seized by the Portuguese government after the death of the concessioner. After 10 years of litigation the case was decided, in 1900, in favor of the United States and Great Britain, although the Portuguese government was made to pay an indemnity of only about \$3,000,000. Several short railway lines penetrate the adjacent territory. The Delagoa Bay Railway has a length of 57 miles in the colony and is continued 290 miles to Pretoria. The Beira Railway with about 200 miles of line in the colony is continued from the British frontier to Bulawayo. During the South African War the port of Lourenço Marques was used for smuggling supplies to the scene of action. The British government, in order to prevent further violation of neutrality, blockaded the port and seized several vessels, proceedings which led to some international complications. Consult Tesset, *The Key to South Africa, Delagoa Bay* (London, 1899).

DELAGRANGE, de-la'grānz', LÉON (1872-1910). A French aviator; also a sculptor. He was born at Orléans and studied at the École des Beaux-Arts, Paris. As a sculptor, he is known for several notable works, especially "Florentine Page," "A Templar," "Love and Youth," "A Huguenot," and "Girl Dancers." In September, 1908, a year after his first flight in an aeroplane, he established a record of 15.2 miles in 29 minutes, 53 seconds, and in 1909 he received the Lagatiner prize at Juvisy (3.6 miles in 10 minutes, 18 seconds), made a sensational flight in a storm at Doncaster, England, on October 17 established a world record (6 miles in 7 minutes, 36 seconds), and in December made a new monoplane record. In 1910 he was killed in an accident with his monoplane at Pau. He was president of the Aéro Club of France in 1907, in 1909 was decorated with the order of the Legion of Honor, and in 1910 received a medal from the Paris Academy of Sciences.

DE LA HIRE, de là ĩr, PHILIPPE (1640-1718). A French writer of considerable prominence on the theory of curves. He was born in Paris and was professor of mathematics in the Collège Royal and at the Académie d'Architecture. The following are his most important works: *Nouvelle méthode de géométrie* (1673); *Sectiones Conicæ* (1685); a treatise on epicycloids and roulettes (1694-1706). He was a pupil of Desargues and founded his researches in conic sections and roulettes on the works of his master.

DELABRE, de-lān'br', JEAN BAPTISTE JOSEPH (1749-1822). A French astronomer, born at Amiens. He studied first under Delisle

and afterward under Lalande, with both of whom he formed a close friendship. When, in 1781, the planet Uranus was discovered by William Herschel, Delambre worked out tables of its motion that obtained for him the annual prize of the Academy and attracted to him the attention of the learned world in general. Soon after he commenced the construction of new solar tables, and at a still later period tables of the motions of Jupiter and Saturn. Along with Méchain, he was appointed by the French government, in 1792, to measure the arc of the meridian between Dunkirk and Barcelona, which was completed in 1799. Afterward he was elected a member of the Academy. In 1802 he was appointed inspector general of education and in 1803 perpetual secretary of the mathematical section of the Institute. The result of his measurements appeared in his great work, *Base du système métrique décimal* (3 vols., 1806-10), for which he was awarded the decennial prize of the Institute in 1810. In 1807 he obtained the chair of astronomy at the Collège de France, rendered vacant by the death of Lalande, his master and friend. In 1814 he was appointed a member of the Council of Public Instruction. Delambre received a multitude of honors during his lifetime. He was a member of most of the learned bodies in Europe and an officer of the Legion of Honor. His writings are very numerous. The principal are: *Astronomie théorique* (3 vols., 1814); *Histoire de l'astronomie ancienne* (2 vols., 1817); *Histoire de l'astronomie au moyen âge* (1819); *Histoire de l'astronomie moderne* (2 vols., 1821); *Histoire de l'astronomie au dix-huitième siècle* (1823-27), published under the care of Matthieu. Besides these, Delambre is the author of several excellent *Mémoires*.

DE LA MOTTE-GUYON. See GUYON.

DE LANCEY, EDWARD FLOYD (1821-1905). An American lawyer and author, born at Mamaroneck, N. Y., and educated at Hobart University and at the Harvard Law School. He was associated with various historical societies and was president of the New York Genealogical and Biographical Society from 1873 to 1877. Among his contributions to the history of New York State are the following: *Documentary History of New York* (1851); *The Capture of Fort Washington the Result of Treason* (1877); *History of Mamaroneck, New York* (1886); *The Origin and History of Manors in the Province of New York* (1886).

DE LANCEY, JAMES (1703-60). An American jurist. He was born in New York, the son of a French Huguenot, was educated at Cambridge, England, and was admitted to the English bar. He returned to New York in 1729 and became a leader in the affairs of the city and province. In 1731 he was appointed a judge of the Supreme Court of the province and from 1733 until his death he was Chief Justice. In 1747-55 and 1757-60 he was Lieutenant Governor. He was one of the founders of King's College, now Columbia University, and presided over the Albany Convention of 1754 (q.v.).

DE LANCEY, OLIVER (1708-85). A British soldier, born in New York City. He was the youngest son of Etienne, and the brother of James De Lancey, the Lieutenant Governor of New York. He fought in the French War, was colonel in chief under General Abercrombie, and was present at the attack on Fort Ticon-

deroga. From 1760 to 1766 he was a member of the Provincial Council of New York. During the Revolution he occupied responsible positions on the Loyalist side and was commissioned brigadier general to raise 1500 troops for the defense of Long Island. He commanded one of three battalions raised, which occupied Long Island. His estates being confiscated, he went to England. His losses were estimated at \$390,000, and he received \$125,000 in compensation.

DE LANCEY, OLIVER (1749-1822). An American soldier. The son of Oliver De Lancey (1708-85), he was born in Edinburgh, Scotland. He entered the British army in 1766, served in the Seventeenth Light Dragoons (of which he eventually became colonel), and was sent to America to prepare accommodations for the regiment. He was present at Bunker Hill and with his regiment participated in the victory of the British at the battle of Long Island. After the capture of General Woodhull and his forces at Jamaica, L. I., it was De Lancey who rescued the wounded general from British sentries when Woodhull tried to escape. The charge that De Lancey struck Woodhull after he had surrendered was not sustained. He occupied important positions in the Loyalist army and was made adjutant general as successor to Major André (1780). At the close of the war De Lancey returned to England, was appointed to settle military claims of the Loyalists, and sat in Parliament from 1796 to 1802. In 1804 his barrack accounts were discovered to be in bad condition, but his apparent defalcations did not result in prosecution; and in 1812 he was promoted general.

DE LANCEY, WILLIAM HEATHCOTE (1797-1865). An American clergyman. He was born in Mamaroneck, N. Y., graduated at Yale in 1817, and studied theology under Bishop Hobart. After being assistant to Bishop White, of Philadelphia, and secretary to the House of Bishops in the General Convention of the Episcopal Church in the United States, in 1828 he became provost of the University of Pennsylvania, and in 1833 assistant minister, and in 1836 rector, in St. Peter's Church, Philadelphia. He was chosen Bishop of the diocese of Western New York in 1838, and in 1852 was a delegate from the Episcopal bishops of the United States to England.

DE LAND. A city and the county seat of Volusia Co., Fla., 60 miles south of St. Augustine, on the Atlantic Coast Line Railroad (Map: Florida, E 2). It is a health and winter resort known for its sulphur springs and its fine shell-paved and shaded streets, contains Carnegie and Sampson libraries, and is the seat of the John B. Stetson University (Baptist), opened in 1887. The city shipped 350,000 boxes of oranges in the year 1913-14. De Land owns its water works. Pop., 1900, 1449; 1910, 2812.

DELAND, MARGARET WADE (CAMPRELL) (1857-). An American novelist, born at Allegheny, Pa. She was educated at New Rochelle, N. Y. She married L. F. Deland, of Boston, in 1880. She commended herself most strongly, perhaps, by those of her stories of which Dr. Lavendar, with his keen yet kindly insight, is the centre, and in which appear a varied group of village characters faithfully and graphically portrayed. In 1886 *The Old Garden and Other Verses* appeared. Her first novel, *John Ward, Preacher*, was published in

1888. She wrote also *Sidney*, a novel (1889); *Story of a Child* (1892); *Mr. Tommy Dove and Other Stories* (1893); *Philip and his Wife* (1895); *Old Chester Tales* (1899); *Dr. Lavendar's People* (1904); *The Common Way* (1904); *The Awakening of Helena Richie* (1906); *The Way to Peace* (1910); *The Iron Woman* (1911); *Partners* (1913).

DELANE, dé-lan', JOHN THADDEUS (1817-79). An English journalist, editor of the *London Times*. He was born in London, Oct. 11, 1817, was educated at Oxford, and called to the bar at the Middle Temple. At the age of 23 he became editor of the *Times*, of which his father was financial manager. Under his editorship the newspaper exerted an influence unparalleled in the history of journalism. He exposed the railway mania (1845), took an active part in the repeal of the corn laws, and led public opinion during the Crimean War. He retired in 1877, and died Nov. 22, 1879. Consult A. I. Dasent, *John Thaddeus Delane: Life and Correspondence* (2 vols., New York and London, 1908).

DELANO, COLUMBUS (1809-96). An American lawyer, born in Shoreham, Vt. He was taken as a child to Ohio where he was educated at the common schools, and was admitted to the bar in 1831, and became known as a criminal lawyer. He was commissary general of Ohio in 1861, served three terms in Congress (1845-47, 1865-69), and in 1869 was appointed Commissioner of Internal Revenue, in which capacity he increased the receipts more than 100 per cent in eight months. In October, 1870, he resigned and from then until 1875 was Secretary of the Interior. He endowed the preparatory school at Gambier, Ohio, which bears his name.

DELANO, FREDERIC ADRIAN (1863-). An American railroad president, born in Hongkong, China. After graduating from Harvard University in 1885 he was employed by the Chicago, Burlington, and Quincy Railroad in various capacities, rising from the position of civil engineer to be general manager at Chicago. For a time he was consulting engineer to the United States War Department in respect to the railroads of the Philippine Islands. In 1905 he became president of the Wheeling and Lake Erie, of the Wabash-Pittsburgh Terminal, and of the Wabash railroads. He was appointed one of the receivers for the Wabash in 1911, and in 1913 he was elected president of the Monon Railroad. He was vice president of the American Unitarian Association in 1907. His addresses were published under the titles *Questions of the Hour* (1911) and *Are Our Railroads Fairly Treated?* (1913).

DELANY, MARY (GRANVILLE) (1700-88). An English author, born at Coulston, Wiltshire. She was a friend of the Duchess of Portland, Miss Burney, George III, and Dean Swift. In her own day she became noted for her "flower work"—an arrangement of bits of colored paper in a kind of mosaic, some of which are now in the British Museum. Her *Autobiography and Correspondence* (ed. by Lady Hanover, 1st series, 3 vols., 1861; 2d series, 3 vols., 1862) contains many anecdotes of Pope, Swift, and other literary folk of the time. Consult the *Diary of Madame D'Arblay (Fanny Burney)* (London, 1842-46), and E. M. Symonds, *Mrs. Delany, Mary Granville: A Memoir* (New York, 1900).

DELANY, PATRICK BERNARD (1845-).

An American electrician and inventor, born in County Kings, Ireland. He early came to the United States and learned telegraphy at Hartford, Conn.; gradually he worked up from office boy to be superintendent of lines. Later he was also a newspaper correspondent, editor, and writer. His inventions include more than 150 patents, covering anti-induction cables, synchronous multiplex telegraphy by means of which six messages may be sent simultaneously over one wire, automatic ocean-cable systems, and rapid-machine telegraphy for land lines. His automatic telegraph system is capable of transmitting and recording 3000 words a minute over a single wire. He was awarded gold medals at the International Invention Exhibition in London (1885), at the Pan-American Exposition (1901), and at the St. Louis Exposition (1904), the Elliott-Cresson gold medal twice, and the John Scott medal of the Franklin Institute. From 1893 to 1895 he was a vice president of the American Institute of Electrical Engineers.

DE LA PASTURE, de lăp'pă-tăr, MRS. HENRY (LADY CLIFFORD). An English novelist and dramatist, daughter of Edward Bonham, British Consul at Calais. She married in 1887 Henry de la Pasture (who was a son of the Marquis de la Pasture and who died in 1908), and in 1910 Sir Hugh Clifford (q.v.). She writes of everyday life with grace and with sentiment and with a humor that has been compared to that of Jane Austen. Among her novels are: *The Little Squire* (1894, dramatized); *Deborah of Tod's* (1897); *Adam Grigson* (1899); *Catherine of Calais* (1901); *Cornelius* (1903); *Peter's Mother* (1905); *The Man from America* (1906); *The Toy Tragedy* (1906, a juvenile); *The Lonely Lady of Grosvenor Square* (1907); *Catherine's Child* (1908); *Grey Knight* (1908); *Unlucky Family* (1908); *The Tyrant* (1909); *Master Christopher* (1911); *The Honorable Mrs Garry* (1912; in England, called *Erica*); *Michael Ferrys* (1913). Her more successful plays were: *Peter's Mother*, which had a long run in 1906 and was revived in 1909; *Deborah*, played in Boston in 1909-10; and *Erica* (1912).

DELAPLANCHE, de-lă'plănsh', EUGÈNE (1836-91). A French sculptor, born at Belleville (Seine). He was a pupil of Duret, gained the *Prix de Rome* in 1864, and the medal of honor in 1878. His "Messenger of Love" (1874), "Aurora" (1878), and the "Virgin of the Lilies" (1884), are in the Luxembourg. Other works by him are "Music" (1878, Paris Opera House), called his masterpiece, "Eve After the Fall" (1870); "Maternal Instruction" (1875, Square of Sainte-Clothilde, Paris); and the statues of "Security" and "Commerce" (1884) in the Hôtel de Ville, Paris (replicas in the Chicago Art Institute). He is also noted for his decorations in relief on vases of Haviland faience. His best work is naturalistic, but at the same time dignified and simple in line, and shows sound mastery of technique. He is represented by 15 works in the Glyptothek, Copenhagen, and in many French museums and in churches.

DE LA RAMÉE, de la rá'má', LOUISE (pseud. OUIDA). See RAMÉE.

DE LA REY, de lá rā'ē, JACOBUS HENDRICK (1847-1914). A famous Boer military leader of French Huguenot descent. He was born in the Lichtenburg District of the Western Transvaal, whither his father had moved after Sir Harry

Smith and the British troops had driven them from the Orange Free State, in consequence of their participation with Pretorius in the driving out of the British from Bloemfontein in 1848. His early life was marked by a severe training in the art of warfare, through numerous campaigns against hostile Kafir tribes. His first experience as a commanding officer was against the Basutos in the early 60's, during which he distinguished himself so conspicuously that when the Boer-British War of 1899-1902 broke out, he was unanimously elected to the command of the Lichtenburg burghers, who afterward formed part of Cronje's western column. Like Cronje, he rarely carried weapons on the field, but was never seen without his field glass, pipe, and Bible. Previous to the war he had represented his district for some years in the Volksraad and was a consistent supporter of Joubert as against Kruger. He was not among the Boers who were anxious to begin war and was one of the few leading members of the Transvaal Volksraad who protested against the ultimatum of President Kruger. Hostilities once begun, however, he rapidly became one of the most determined leaders of his people and in the first stages of the war greatly distinguished himself by the skill with which he laid out the lines of the battle of Magersfontein and other smaller encounters. Later, he conducted a well-ordered retreat before the British advance under Lord Roberts and at Nooitgedacht, in 1900, captured 500 British troops. In the second or guerrilla stage of the war he was equally distinguished by his successful tactics, his most important success being the capture of the British general, Lord Methuen, on March 7, 1902, together with a number of British troops. His lack of hospital accommodations and the necessity he was under of making forced and sudden marches precluded his detention of the wounded Lord Methuen, whom he accordingly had to release. His entire career throughout the war was marked by great personal gallantry and by the humane treatment accorded to his enemies. With the Boers he was one of the most popular leaders of the two republics, and he gained from his foes the reputation of being a leader of unerring military judgment and remarkable resourcefulness. In 1902 he took part in the peace negotiations with Great Britain and was one of the deputation appointed to visit Europe and the United States for the purpose of raising funds for the distressed Boers. In December, 1903, he went to India in order to induce the Boer prisoners of war at Ahmednagar to take the oath of allegiance to England. After the formation, in 1907, of the new Transvaal Parliament he became a member of the Legislative Assembly.

DE LA RIVE, de lá rēv', AUGUSTE ARTHUR (1801-73). A Swiss physicist who devoted much attention to researches in electricity. He was born in Geneva and at the age of 22 was appointed to the chair of natural philosophy in the Geneva Academy. He was one of the first to investigate the temperature of the earth's crust and made observations in an artesian well 700 feet in depth. He discovered the process of electrogilding, and in 1842 received for it a prize of 3000 francs from the French Academy of Sciences, of which in 1864 he was made a foreign associate. He made original discoveries in connection with magnetism, electrodynamics,

the connection of magnetism with electricity, the properties of the voltaic arc, and the passage of electricity through extremely rarefied media. He published a complete treatise on electricity (1853-58), which was for many years considered a standard work.

DELA ROCHE, de-lá'rósh', PAUL (1797-1856). A French historical and portrait painter. He was born in Paris, July 17, 1797, and was a pupil of Watelet and of Baron Gros. He soon became one of the most representative painters of his time, for he was an eclectic, who endeavored to unite the excellences of the Classic and Romantic schools, the line of the one with the color of the other. In his "Joan of Arc" (Wallace collection, London) and the "Death of Queen Elizabeth" (Louvre) he essayed to follow the Romantic school, but early turned to historical painting. His "Death of the Duke of Guise" (1835, Chantilly Museum) and "Cromwell Opening the Coffin of Charles I" (1831, Nîmes Museum) are executed with technical power and fine dramatic effect. His "Children of Edward IV in the Tower" (Louvre) appeared in 1831. Among other historical subjects are the "Execution of Lady Jane Grey" (1834) and "Lord Strafford on the Way to Execution" (1837). His most ambitious work, finished in 1841, is the hemicycle in the Theatre of the Ecole des Beaux-Arts in Paris. In it the arts of different nations are depicted, and the 70 life-size figures that occupy the canvas are portraits of the artists of the times and countries represented. The figure that represents Gothic architecture is said to be a portrait of the painter's wife, who was a daughter of Horace Vernet. After her death, in 1845, he produced "Christian Martyr" (1855, Louvre), the "Crown of Thorns," and the "Return from Golgotha." These pictures show a spontaneity and freedom of treatment not always apparent in the works of Delaroche and express a new impulse born of love and sorrow. Among his later historical works are: "Napoleon at Fontainebleau," painted in 1845 (Leipzig Museum); "Bonaparte at St. Bernard" (1850); "Marie Antoinette Before the Revolutionary Tribunal" (1851). From 1840 until his death he was the most popular portrait painter in France. In the historical accuracy of his compositions Delaroche surpassed all other painters of his day. But he painted without impetuosity and consequently with little feeling. Although he had the pictorial sense in a high degree, he often bordered on the melodramatic. His large and sumptuous picture of the "Death of Queen Elizabeth" is an instance of this. He painted rich stuffs with great skill, but never touched high sentiment or deep feeling. S. W. Reynolds, Desclaux, and others have engraved his principal works. Delaroche was a member of the Institute and a professor in the Ecole des Beaux-Arts; he was an officer of the Legion of Honor and received many medals. He died in Paris, Nov. 4, 1856. Consult the monographs by Lomenie (Paris, 1844); Mirécourt (ib., 1856); Halévy, *Notice sur la vie et les ouvrages de Paul Delarouche* (ib., 1858); Rees, *Horace Vernet and Paul Delarouche* (London, 1880); Lalaing, *Les Vernet, Gericoalt, et Delarouche* (Paris, 1888); Muther, *History of Modern Painting* (London, 1907).

DE LA ROCQUE, SIEUR. See ROBERVAL.

DE LA RUE, de-lá'róo', WARREN (1815-89). An English scientist. He was born in Guern-

sey, educated in Paris, and devoted his leisure hours to scientific research, especially in the fields of chemistry and electricity. Between 1836 and 1848 he published several articles on these subjects, and in 1850 he constructed a large reflecting telescope at Canonbury, moving it later to Cranford, Middlesex. He introduced important improvements in oil-refining, color-printing, and envelope-folding machines, but his importance is due chiefly to pioneer work in photographing the heavenly bodies. He was president of the Royal Astronomical Society from 1864 to 1866. He published: *On Celestial Photography in England* (1859); *Researches on Solar Physics*, with Balfour Stewart and B. Loewy; and a number of papers and lectures on astronomy and physics.

DE LA TORRE, DUKE. See SERRANO Y DOMINGUEZ.

DE LA TOUR, de la tōor, MAURICE QUENTIN. See LA TOUR, MATRICE QUENTIN DE.

DELA TTE, de-la'tr', ALBERT LOUIS (1850-). A French archaeologist, born at Déville-les-Rouen. Sent as a missionary to Algeria, he became chaplain of the church of St. Louis of Carthage (q.v.) and conservator of the archaeological museum at Algiers. His investigations among the ruins of ancient Carthage have been very valuable. He became director of the Musée Lavignier de Saint-Louis de Carthage, founded through his efforts in 1875. His works include: *Carthage et la Tunisie au point de vue archéologique* (1883); *Inscriptions de Carthage* (1884-85); *Souvenirs de la croisade de Saint Louis trouvés à Carthage* (1888); *Les tombeaux puniques de Carthage* (1890); *Souvenirs de l'ancienne église d'Afrique* (1893); *Musée Lavignier de Saint-Louis de Carthage* (3 vols., 1899-1900). For his articles in periodicals, consult Marquis d'Anselme de Puysey, *Etude sur les diverses publications du Révérend Père Delattre* (Paris, 1895).

DELA TTE, ROLAND. See LASSO, ORLANDO DI.

DELAUNAY, de-ló'ná', CHARLES EUGÈNE (1816-72). A French astronomer and mathematician. He was professor of mechanics in Paris and a member of the Academy and succeeded Leverrier as director of the Observatory in 1870. He published: *Sur une nouvelle théorie analytique du mouvement de la lune* (1846); *Ralentissement de la notation de la terre* (1866); *Rapport sur les progrès de l'astronomie* (1867); *Cours élémentaire d'astronomie* (6th ed., 1876); *Traité de mécanique rationnelle* (7th ed., 1883). His *Théorie de la lune* (2 vols., 1860-67) was left unfinished at his death. Consult Thevenot, *Biographie de C. E. Delaunay* (Paris, 1878).

DELAUNAY, (JULES) ELIE (1828-91). A French mural and portrait painter. He was born in Nantes and was the pupil of Lamothe and Flandrin in the Ecole des Beaux-Arts. He is known chiefly for his mural paintings in the foyer of the Opera House, the Hôtel de Ville, the church of La Trinité, and the Panthéon in Paris. The paintings in the Panthéon, representing scenes from the life of Saint-Genevieve, he did not live to complete. Among his best works are: "The Last Supper" (1861); "The Plague at Rome" (1869), a water color called his masterpiece; "The Communion of the Apostles"; "Diana," a fine nude—all in the Luxembourg; "The Death of the Centaur Nessus" (Nantes Museum). His later years were devoted almost entirely to portrait painting. Of

this kind his "Mother" (Luxembourg) and "Mademoiselle Toulmouche" are among his best canvases. His work is characterized by great attention to form, firm modeling, and a noble, rather severe style of composition. His color was at first hard, but later showed fantastic yet harmonious effects. He was awarded a first-class medal at the Paris Exposition of 1878 and the medal of honor in 1889. In 1878 he became an officer of the Legion of Honor and the following year was made a member of the Institute.

DE LAUNAY, EMANUEL L. H. See AN-TRAIGUES.

DELAUNAY, LOUIS ARSÈNE (1826-1903). A French actor, born in Paris. He made his first appearance at the Odéon in 1846 and for two years was engaged there as leading juvenile. In 1848 he appeared as Dorante in *Le Menteur* at the Théâtre Français and in 1850 became a regular member of that theatre. In 1877 he was appointed professor of dramatic declamation at the Conservatoire. He received the decoration of the Legion of Honor in 1883 and retired from the stage in 1887. He was one of the most accomplished of French actors, finding his parts in the plays of Augier, De Musset, Victor Hugo, and Pailleron.

DELAUNAY, MARGUERITE JEANNE. See STAAL.

DE LAUNE, de lôn, ETIENNE. See LAUNE, or LAUNE, ETIENNE DE.

DE LAVAL, dâ la-vâl', CARL GUSTAF PATRIK (1845-). A Swedish inventor and engineer, born at Blåsenborgs, Dalarna, Sweden. In 1866 he graduated from the Institute of Technology at Upsala, where he took his doctor's degree in philosophy in 1872. For the next five years he was occupied with various building operations, such as constructing sulphur refineries, copper smelters, glass works, and other industrial plants, but after 1877 he devoted himself exclusively to inventions. In 1878 he patented a cream skimmer, and in the following year he put on the market his continuous centrifugal cream separator. For the manufacture of this machine a large factory was built at Stockholm, and the contrivance was soon known all over the world. In 1883 he made the first successful steam turbine (see STEAM TURBINE), and after further experiments with his invention he constructed in 1892 a steam motor that made 30,000 revolutions a minute. His flexible shaft, which overcame the greatest obstacle in the use of the high-speed turbines, constitutes one of the most original and daring inventions in the field of mechanical science. He also invented a steam boiler that was able to withstand more than 100 atmospheres' pressure. His lactator, a perfected milk separator, was not received into practical use. In 1894 he was chosen as representative for Kopparsberg in the First Chamber. In 1886 he became a member of the Academy of Sciences (whose gold medal he received in 1892) and in 1896 an honorary member of the Agricultural Academy.

DEL'AVAN. A city in Walworth Co., Wis., 62 miles southwest of Milwaukee, on the Chicago, Milwaukee, and St. Paul Railroad, and on Rock River (Map: Wisconsin, E G). It is the seat of the State School for the Deaf and contains a public library. The city is noted for its mineral springs and, with Delavan Lake in the vicinity, is a popular place of resort. There are some manufactures of knit goods. The

water works are owned by the city. Pop., 1900, 2244; 1910, 2450.

DELAUVIGNE, de-lâ-vé'ny', JEAN FRANÇOIS CASIMIR (1793-1843). A French lyric poet and dramatist, born in Havre, April 4, 1793. His first important writings were dithyrambic poems, *Les messéniques* (1818), antique in form, but present and direct in their allusions to the disasters of the last Napoleonic years. These gave stirring expression to popular emotions, especially to the rancor and fears of the Liberals at the reactionary rule of the restored Bourbons. They achieved sensational success. In 1819 he turned the same talent to celebrate Joan of Arc, thus appealing to a universal patriotic sentiment before either Hugo or Lamartine had begun to touch the French heart with their Napoleonic verses. The forerunner should not be forgotten in the greatness of his successors, and in drama Delavigne is important to the continuity of historic development. He stands between Beaumarchais and Emile Augier, almost the sole talented representative of dignified comedy, and his dramatic work, taken chronologically, represents almost every phase of the conversion of a strict Classicist into a moderate Romanticist. However, his lack of genuine, forceful inspiration and enthusiasm caused his works to be relegated to the second rank, especially when compared with those of the more buoyant geniuses of the Romantic school. His *L'Ecole des vieillards* (1823) still holds the boards by its lively dialogue, graceful style, and ingenious invention. *Marino Falieri* (1820) anticipates the Hugo-esque mingling of tragic and comic elements, preserving an academic correctness of form without following the classic rules. Other plays still occasionally acted and often read are: *Les pépées suédoises* (1819), *Louis XI* (1832); *Les enfants d'Edouard* (1833); and *La fille du Cid* (1839). Delavigne was elected to the Academy in 1825 and in 1830 rose to the political occasion, as he had done after Waterloo. His song, "La Parisienne," set to music by Auber, rivaled for a time the "Marseillaise" itself, and "La Varsoivienne" was sung as a battle march by the rebelling Poles. Indeed, it is as a poet of politics, a man of the hour, that Delavigne is at his best. At times very popular, he needed striking occasions to evoke his genius. When he became contemplative, he was commonplace, but in direct appeal he wrote with terse vigor. His private life was above reproach. He died in Lyons, Dec. 11, 1843. His complete works were published in 1870 in four volumes. Consult Ed. Sambuc, *Casimir Delavigne* (Paris, 1893), and N. M. Bernadin, *Devant le Rdcau, conférences dramatiques* (ib., 1901).

DEL'AWARE. One of the thirteen original States of the United States, constituting one of the Middle Atlantic States (Map: United States, L 3). It lies between lat. 38° 30' and 39° 45' N. and long. 75° and 75° 50' W. It is bounded on the north by Pennsylvania, on the east by the estuary of the Delaware River and by Delaware Bay, which separate it from New Jersey, and by the Atlantic Ocean; on the south and west by Maryland. It has a total area of 2370 square miles, of which 1965 square miles is land and 405 square miles is water surface. It has a length of about 96 miles from north to south, with a greatest width of 35 miles and a least width of 9 miles.

At the entrance to Delaware Bay is Cape Henlopen, opposite Cape May, N. J.

The State of Delaware forms a portion of the Middle Atlantic slope, being embraced largely within the physiographic province of the coastal plain, although somewhat over 100 square miles in the northern part of the State fall within the piedmont plateau province. This latter area, which consists of rolling country, reaches an elevation of 488 feet at Centerville, near the northern border of the State. The streams flow with rapid currents until they pass the "fall line," where they continue with sluggish courses or empty into tidal estuaries. The coastal plain consists of a broad terrace upland of low elevation, known as the Wicomico terrace, which rises from about 60 feet in the southern part of the State to somewhat over 100 feet in the northern part and constitutes the divide between the streams. This is followed by a low terrace, known as the Talbot terrace, which surrounds the shores of the Delaware River and Bay and extends up the various stream channels, reaching an elevation along the landward margin of about 40 feet, from whence it slopes gradually to tide level at most points. The streams of Delaware, while numerous, are all small. In the northern part of the State the streams flow in an easterly or southeasterly direction across it from Pennsylvania and Maryland and empty into the Delaware. Nearly all the State, however, lies on the peninsula between Delaware and Chesapeake bays, and the divide between their waters traverses the States from north to south, keeping at a uniform distance from the east coast. Thus, as Delaware broadens southward, a relatively greater part of it lies west of the divide in the south than in the north. None of these rivers are navigable, although the estuary-like mouth of Christiana Creek permits the ascent of vessels to Wilmington. The Delaware coast of Delaware Bay and the estuary of Delaware River offer few advantages in the way of harbors. Portions of the shore are marshy, and the only good harbors are at Lewes, Wilmington, and New Castle. The Delaware Breakwater has been constructed at great expense near the mouth of the bay, in order to remedy somewhat this deficiency of safe harbors. On the southern border of the State there is an area of swamp land covering 70 square miles.

On the Atlantic coast there are a number of shallow bays or lagoons separated from the ocean by sandy reefs; the shallowness of their entrances, however, limits their usefulness. The largest bays are Rehoboth and Indian River bays, which have a common outlet known as Indian River Inlet, which permits navigation by vessels drawing less than six feet of water.

Climate and Soil. Situated on the east coast of the continent, Delaware has a temperate climate, with a considerable range of temperature and an ample rainfall.

The average annual temperature is about 55° F., varying from 56° at the extreme south to about 52° at the extreme north. The average daily range of temperature, or difference between the highest and lowest temperatures during 24 hours, is from 16° F. to 20° F. The highest summer temperature on record is 103° F. and the lowest winter temperature —17° F.; even in midsummer the temperature has descended to 50° F. On the average August day the temperature rises to about 85° F., and on

the average January day the temperature descends to 25° F. In the fall frosts seldom occur before October 10 and may not occur until about November 1, while in the spring they may occur as late as the latter part of April. The advent of spring (i.e., the awakening of plant life) occurs on the average about the end of March.

The annual rainfall is, on the average, from 40 to 45 inches over the State as a whole, but is slightly greater on the coast than inland. The rainfall is rather evenly distributed over the whole year, although there seems to be somewhat less precipitation in late fall and early winter than at other seasons of the year. Damaging droughts are not infrequent, but killing droughts are unknown. Heavy rainfalls take place, sometimes an average month's rainfall occurs in a single day, but damaging rainstorms are rare. Thunderstorms and hailstorms are most frequent from May to August. The prevailing winds are from the northwest from October to May, from the southwest in June and July, and variable during the intervening spring and fall months.

The soils of Delaware are dependent on the underlying geological formations from which they are derived, those of the north in the piedmont plateau belt coming from the underlying crystalline rocks and presenting considerable variation on account of the diversity of their mineral constituents. They possess much less importance from an agricultural standpoint than those farther south derived from the sedimentary deposits comprising the coastal plain. Several well-marked types have been described, the most important being the Sassafras loam, which occupies the high levels of the Wicomico terrace, this soil being well adapted for wheat, corn, and tomatoes, and also affording largely the soil on which the famous peach orchards of Delaware and Maryland are located. Another important soil is the Norfolk sand, covering large areas on both the Wicomico and Talbot terraces and being chiefly employed for the production of early truck crops, including vegetables and small fruits not only in Delaware but throughout the coastal plain district from Long Island to Cape Hatteras. The Portsmouth sand, formed under similar conditions but where the country is less well drained, is well adapted for late truck crops. Many other soil types, including the Elkton clay, Susquehanna clay, and gravel, occupy smaller areas, but are of much less importance from an agricultural standpoint. The important soils described above are derived directly from the underlying Pleistocene formations, while the latter are in part derived from the subjacent Cretaceous beds.

Geology and Mineralogy. The northern part of the State has been already described as falling within the area of the piedmont plateau, this district being underlain by crystalline rocks of various kinds, both of sedimentary and eruptive origin; the former consisting of gneiss, mica schist, and limestone, and the latter of granite, apophyllite, serpentine, and gabbro with dikes of pegmatite and diabase. Overlying this piedmont plateau complex of crystalline rocks are the coastal-plain formations which comprise representatives of the Cretaceous and Pleistocene periods. The strata are for the most part unconsolidated and consist of marls, clays, sands, and gravels, the total thickness of the deposits in cer-

tain parts of the area being less than 1000 feet. Clays suitable for the manufacture of brick and terra cotta, and kaolin, are found in the vicinity of Wilmington. A small area of granite occurs near this city, from which building stone and road material are quarried, and some feldspar has been extracted. Glass sand, marls, and bog-iron ore are known to form extensive deposits.

Mining. The mineral resources of the State are limited to its quarries, its clay, sand, and gravel pits, and its mineral waters. All of these are of little importance compared with those of other States. The total mineral production of Delaware in 1912 was valued at \$425,360, of which \$193,074 was represented by the output of the stone quarries and \$162,216 by the clay products.

Agriculture. Delaware ranks forty-seventh in both area and population among the States. Although a considerable portion of its population lives in a manufacturing centre, it is a distinctly agricultural State. As most of it is part of the Atlantic coastal plain, as a whole it is level and easily tilled. Between 1900 and 1910 there was an increase of 9.5 per cent in population, while the number of farms increased 11.9 per cent. In the same period there was a decrease of over 2.6 per cent in the acreage of farm land and a decrease of 5.4 per cent in the improved land in farms. The total number of farms in the State in 1910 was 10,836, compared with 9687 in 1900. Of an approximate area of 1,257,600 acres, there were in farms, in 1910, 1,038,866 acres, compared with 1,066,228 in 1900. The improved land in farms in 1910 amounted to 713,538 acres, compared with 754,010 acres in 1900, a decrease of 40,472 acres in the decade. The average acres per farm decreased from 110.1 in 1900 to 95.9 in 1910. The total value of farm property which includes land, buildings, implements and machinery, domestic animals, poultry and bees, was \$63,179,201, in 1910, compared with the value in 1900 of \$40,697,654, an increase in the decade of \$22,481,547, or 55.2 per cent. The average value of all property per farm in 1910 was \$5830, compared with \$4201 in 1900, while the average value of land per acre increased from \$22.29 in 1900 to \$33.63 in 1910.

Of all the farms in the State in 1910 (10,836), 6301 were operated by owners and managers and 4535 by tenants. About 42 out of each 100 farms were operated by tenants. In 1890 and in 1900 the proportion was even higher; in the latter year it amounted to slightly more than 50. The fluctuations in the number and proportion of farmers who are tenants arise mainly from the changes among the share tenants. The number of cash tenants has increased slowly since 1880. Share and share-cash tenancy, on the other hand, increased rather rapidly for 20 years, but decreased considerably during the decade 1900-10, and among colored farmers the proportion increased slightly.

Of the owned farms in 1910, numbering 6178, 3817 were free from mortgage, while 2264 were mortgaged. The total amount of the mortgage debt was \$3,068,721, while the value of the land and buildings mortgaged was \$8,801,976. The average debt per farm was \$1518 in 1910, compared with \$2147 in 1890, while the average equity per farm in 1910 was \$2837 in 1910 and \$2728 in 1890.

Over half the farms in the State are between

50 and 174 acres in size, and nearly three-fourths are between 20 and 174 acres. Slightly over nine-tenths of the farm operators in 1910 were whites and nearly one-tenth colored. The total number of native white farmers was 9504, and of negro and other non-white, 922. The foreign-born white farmers numbered 410, of whom nearly one-third were born in Germany.

The total value of the crops in 1909 was \$9,121,809, against \$6,275,360 in 1899. Combined acreage of crops was 438,522, representing 61.5 per cent of the total improved land in farms (713,538 acres). The general character of the agricultural products is indicated by the fact that about one-half, or 51.4 per cent of the total value, in 1909 was contributed by the cereals; about one-fifth by potatoes and other vegetables, and about one-eighth by hay and forage; the remainder, representing 15.6 per cent of the total, consisted chiefly of small fruits, forest products, orchard fruits, and nuts. The following table gives the acreage, production, and value of the principal crops in 1913 and in 1909. The figures for 1913 are estimates by the United States Department of Agriculture, while those for 1909 are from the thirteenth census.

		Acreage	Prod bu	Value
Corn	1913	197,000	6,206,000	\$3,662,000
	1909	188,755	4,839,548	2,903,442
Wheat	1913	133,000	1,638,000	1,441,000
	1909	111,215	1,643,572	1,687,539
Oats	1913	4,000	122,000	62,000
	1909	4,226	98,239	51,022
Rye	1913	1,000	14,000	11,000
	1909	1,017	11,423	8,169
Potatoes	1913	11,000	957,000	718,000
	1909	9,703	880,300	453,400
Sweet potatoes and yams	1913	5,000	675,000	405,000
	1909	5,229	733,746	276,679
Hay	1913	72,000	94,000*	1,476,000
	1909	80,669	103,575	1,174,473

* Tons.

The leading crops in the order of their importance are corn, wheat, hay and forage, potatoes, and sweet potatoes and yams. Potatoes, sweet potatoes and yams, and dry peas are the only crops outside of cereals and hay and forage which have any considerable acreage. There has been a considerable fluctuation in the acreage of corn. In the last 30 years the decrease in the acreage of oats has been marked. The acreage of wheat, on the other hand, has made a considerable gain since 1870, though it decreased slightly during the decade 1900-10. The acreage of hay and forage nearly doubled in the same period, and that of sweet potatoes and yams more than doubled. The State is an important producer of orchard and tropical fruits. The total value of these in 1909 was \$199,766, and the quantity produced was 309,274 bushels. The production of orchard fruits greatly decreased in the decade 1899-1909, while the production of grapes increased. The value of all orchard fruits in 1899 was \$263,000, while the value of grapes increased from \$31,701 in 1899 to \$43,967 in 1909. The most important of the orchard fruits is apples, of which there were grown 183,094 bushels in

1909, with a value of \$115,371. Pears ranked next in value, with 105,357 bushels, valued at \$52,022; peaches and nectarines, 16,722 bushels, valued at \$21,402. Other fruits of less importance are plums, prunes, and quinces. Of much greater value than the orchard fruits are small fruits. There were produced of these, in 1909, 14,425,209 quarts, valued at \$649,732. Strawberries are by far the most important of the small fruits. The production in 1909 was 12,730,265 quarts, valued at \$569,354. Blackberries and dewberries rank next in value. The total acreage of small fruits in 1909 was 8687, a decrease from 10,599 in 1899. The value of all vegetables other than potatoes and sweet potatoes and yams in 1909 was \$1,102,620. The raising of flowers and plants and nursery products is of the same importance. The total output in 1909 was valued at \$110,486.

Live Stock and Dairy Products. The total value of the live stock on the farms of the State in 1910 was \$6,817,000. This includes domestic animals, poultry, and bees. The cattle numbered 54,986, with a value of \$1,648,333; horses, 33,065, valued at \$3,451,791; mules, 5935, valued at \$764,133; swine, 49,260, valued at \$337,910; sheep, 7806, valued at \$36,898. The total number of fowls of all kinds was 876,081, valued at \$560,146. The estimates of live stock on Jan. 1, 1914, as given by the United States

000, valued at \$597,000; horses, 35,000, valued at \$3,710,000; mules, 6000, valued at \$756,000. The number of dairy cows on April 15, 1910, was 35,708. The milk sold in 1910 was 4,425,909 gallons, valued at \$665,953. The butter sold amounted to 1,024,945 pounds, valued at \$277,202. The total value of milk, cream, and butter fat sold, and butter and cheese made, in 1909 was \$1,089,497.

Forest Products.—There were 5429 farms in the State in 1909 which reported forest products, the total value of such products being \$346,062, as compared with \$250,481 in 1899. Of the value in 1909, \$180,061 was reported as that of products used or to be used on the farms themselves, \$101,814 as that of products sold or for sale, and \$64,187 as the amount received for standing timber. Forest products not produced on farms are not included in these figures.

Manufactures. Although, as noted above, the chief industry of the State is agriculture, its manufacturing interests are important. The transportation facilities of Delaware are excellent, as no part of the State is removed from navigable water, and its location gives it direct railroad connection with the large railway systems in the East. There is but one city having a population of over 10,000, Wilmington, with a population of 87,411. The following table

COMPARATIVE SUMMARY FOR 1909 AND 1904

THE STATE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES

INDUSTRY	Census	Number of establishments	PERSONS ENGAGED IN INDUSTRY					Primary horse power	Capital	Salaries	Wages	Cost of materials	Value of products	Value added by manufacture
			Total	Proprietors and firm members	Salaried employees	Wage earners (average number)								
Expressed in thousands														
STATE—All Industries	1909	726	23,984	722	2,024	21,238	52,779	\$69,906	\$2,322	\$10,296	\$30,938	\$52,840	\$21,982	
	1904	631	20,567	641	1,451	18,475	49,490	50,526	1,629	8,158	24,884	41,160	16,276	
Canning and preserving	1909	77	1,556	103	84	1,369	1,725	1,520	41	273	1,553	2,106	553	
	1904	59*	1,122	86	37	999	1,274	1,065	18	187	1,031	1,456	425	
Cars and general shop construction and repairs by steam-railroad companies	1909	3	1,629	104	1,525	1,835	1,835	1,835	99	1,147	1,943	3,251	1,308	
	1904	5	1,430	80	1,341	1,345	1,010	1,010	82	815	649	1,558	909	
Cars, steam-railroad, not including operations of railroad companies	1909	3	1,837	158	1,679	3,388	3,497	3,497	185	1,131	1,913	3,628	1,715	
	1904	3	1,661	102	1,559	1,717	2,707	2,707	112	1,031	1,942	3,600	1,658	
Flour-mill and grist-mill products	1909	65	244	86	19	139	3,349	672	14	57	1,500	1,752	252	
	1904	47	214	63	12	137	2,827	494	8	58	1,315	1,537	222	
Foundry and machine-shop products	1909	37	2,538	21	307	2,210	4,270	7,401	394	1,247	2,402	4,781	2,379	
	1904	33	2,630	16	286	3,328	3,653	7,163	327	1,195	2,246	4,484	2,338	
Iron and steel, steel works and rolling mills	1909	5	785	75	71	1,055	4,912	2,107	92	416	1,059	1,715	656	
	1904	5	1,146	91	1,055	10,310	6,280	6,280	103	412	940	1,597	657	
Leather, tanned, curried, and finished	1909	16	3,241	12	184	3,045	4,417	8,249	351	1,367	8,147	12,079	3,932	
	1904	20	3,046	18	192	2,836	5,377	6,646	251	1,176	7,911	10,251	2,340	
Lumber and timber products	1909	116	1,369	148	47	1,174	3,767	1,048	23	330	608	1,312	704	
	1904	94	786	113	18	655	3,037	551	9	196	405	857	452	
Paper and wood pulp	1909	6	599	4	49	546	4,318	3,314	61	310	1,587	2,292	705	
	1904	6	575	6	22	547	5,115	3,176	70	252	1,270	1,905	635	
Shipbuilding, including boatbuilding	1909	10	1,411	8	164	1,239	3,582	2,888	161	697	981	1,990	1,009	
	1904	10	1,193	11	60	1,123	1,512	2,630	92	563	895	1,781	896	

* Excluding statistics for one establishment, to avoid disclosure of individual operations.

Department of Agriculture, was as follows: cattle, other than milch cows, 19,000, valued at \$555,000; milch cows, 39,000, valued at \$2,028,000; sheep, 8000, valued at \$41,000; swine, 58,

gives the most important facts relative to manufactures in the State in 1909, compared with 1904. Only such industries as had a product valued at \$1,000,000 or over in 1909 are

included. From this table it will be noted that there were, in 1909, 726 manufacturing establishments which gave employment to an average of 23,984 persons during the year and paid out \$12,618,000 in salaries and wages. The products of these establishments were valued at \$52,840,000, to produce which materials costing \$30,938,000 were utilized. The value added by manufacture was thus \$21,902,000, which figure best represents the net wealth created by manufacturing operations during the year.

In general, this table brings out the fact that the manufacturing industries as a whole showed a considerable increase in the period 1904-09. During this period the number of establishments increased 15.1 per cent, and the average number of wage earners 15 per cent, while the value of products increased 28.4 per cent and the value added by manufacture 34.6 per cent. The most important industries, in the order of their importance, are those connected with the manufacture of leather, those relating to foundry and machine-shop products, cars and steam railroads, paper and wood pulp, canning and preserving, shipbuilding, flour and gristmill products, iron and steel, steel works and rolling mills, and lumber and timber products. The leather industry showed a greater rate of increase from 1904 to 1909 in the value added by manufacture than any other of the specified industries. The steam-railroad repair shops and the canning and preserving industry also showed remarkable increases both in value of products and in value added by manufacture. The total number of persons engaged in the manufacturing industries in 1909 was 23,984. Of these, 21,248 were wage earners. The male wage earners numbered 17,505, and the female 3733. There were 529 wage earners under 16 years of age, of whom 300 were male and 229 female. Nearly all the women and children are employed in canning and preserving. For the great majority of wage earners the prevailing hours of labor range from 54 to 60 hours a week, or from 9 to 10 hours a day, only 8 per cent of the total employed in establishments working less than 9 hours a day and only 4.5 per cent in establishments working more than 10 hours a day.

The manufacturing industries are largely centralized in the city of Wilmington. In 1909, 72 per cent of the total value of products was reported from this city, and 69 per cent of the average number of wage earners were employed there. Between 1899 and 1909 the districts outside of Wilmington gained slightly more in the value of manufactures than did the city itself. This is due to the fact that two of the largest and most important industries—canning and preserving and lumber and timber products—are conducted entirely outside of Wilmington.

Fisheries. The fisheries of Delaware are not important. The value of the products for the year ending Dec. 31, 1908, was only \$541,200. Of this the largest in point of value and amount was menhaden. The value of this fish taken was \$151,790, and the amount 59,815,400 pounds. Next in order of importance were oysters, of which 154,600 bushels with a value of \$111,990 were taken. Of oysters for seeding purposes, 193,200 bushels, valued at \$56,620, were caught. Following in order of importance

were shad, 869,800 pounds, valued at \$67,860; squeteague, or sea trout, 2,500,000 pounds, valued at \$29,190; crabs, 3,178,300 pounds, valued at \$13,390. Among other fish caught are striped bass and catfish. In 1908 there were 65 vessels employed in the fisheries of the State, and these were valued at \$679,565. The number of independent fishermen were 853, and the wage-earning fishermen employed numbered 903.

Transportation. The State has good facilities for transportation, both by land and by water. Two important railroads pass through it, the Pennsylvania and the Baltimore and Ohio. The Wilmington and Northern Railroad is leased by the Philadelphia and Reading Railway Company. The longest mileage is that of the Pennsylvania road, which has 275 miles. The total railway mileage in 1913 was about 400. There is no State railway commission. The Chesapeake and Delaware bays are connected by a canal $13\frac{1}{2}$ miles long, 66 feet wide, and 10 feet deep. This work was completed in 1889 at a cost of \$2,253,000. Wilmington has considerable coast-wise traffic, and it is a customs district. The city is connected with New York by a line of steamers. In recent years the government has made appropriations for improving Wilmington harbor and for dredging a channel in several of the larger streams of the State. A massive breakwater at Lewes was begun in 1837 and was completed in 1869 at a cost of over \$2,000,000. The mileage of electric railways on Dec. 31, 1912, was 110.37.

Banks. There were on June 14, 1913, 25 national banks in Delaware. These had a capital of \$1,689,000, deposits subject to check of \$8,224,000. There were also four State banks with a capital of \$520,000, deposits subject to check of \$1,514,083, and savings deposits amounting to \$625,345. On June 4, 1912, there were two savings banks with 33,575 depositors and deposits amounting to \$10,800,113. In addition there were 16 loan and trust companies with deposits subject to check amounting to \$7,705,193 and savings deposits amounting to \$957,408.

Population. The population of Delaware from 1790 is as follows: 1790, 59,000; 1820, 72,700; 1850, 91,500; 1860, 112,200; 1870, 125,000; 1880, 146,600; 1890, 168,500; 1900, 184,700; 1910, 202,322. The estimated population in 1914 was 209,817. The ratio of increase in the decade 1900-10 was 9.5 per cent, as compared with 21 per cent for the entire country. The white population in 1910 was 171,102, compared with 153,977 in 1900. The negro population in 1910 was 31,181, compared with 30,697 in 1900. The native-born population in 1910 was 184,830 and the foreign-born 17,492. Of the white population, 127,809 were of native parentage, 17,566 of foreign parentage, and 8307 of mixed parentage. Wilmington is the only city in the State having over 25,000 inhabitants. Its population in 1910 was 87,411, compared with 76,508 in 1900. Other cities with their populations in 1910 and 1900 are Dover (the capital), 3720, 3229; Milford, 2603, 2500; New Castle, 3351, 3380.

Education. Educational conditions in the State are far from satisfactory, but the people and the Legislature have evidenced a determination to remedy them. The Legislature of 1907 passed a compulsory education law by which all children between the ages of 7 and 14 are re-

quired to be sent to school. This law was amended in 1909. The Legislature of 1911 abolished the existing State Board of Education and established a new State board with wider powers. This board is composed of seven members, who serve without compensation. The Legislature of 1913 gave the Governor the power to appoint a State Commissioner of Education who would also be the secretary of the State Board of Education. The term of this officer is for two years, and the first appointment made was on May 1, 1913. The present law under which the public schools are administered dates from 1898. Successive legislatures since that time have amended these laws. Provision has been made for the establishment of free public libraries in schools and for moral and humane education. Measures have also been passed providing for the improvement of schoolhouses for colored children and for the consolidation and uniting of school districts for colored people. Although there are no normal schools in the State, provision is made for the attendance of a certain number of persons at normal schools in other States.

Authoritative statistics in regard to school enrollment, attendance, etc., are not available for a date later than 1910. In that year the total school population between the ages of 6 and 20 was 57,932. The total number of persons attending school in the same year was 35,304. Of these 23,789 were of native white parentage, 5103 of foreign-born or mixed parentage, and 5815 negroes.

Out of a population of 163,080 of 10 years of age or over, in 1910, 13,240, or 8.1 per cent, were illiterate. In 1900 the number was 17,531 and the percentage 12. Among persons of native parentage there were 3362, or 3.3 per cent, illiterates in 1910, while for the negro population the total number of illiterates in 1910 was 6345, or 25.6 per cent. The illiterates among the negroes in 1900 numbered 8967, or 38.1 per cent, of the colored population. In 1912 there were 23 public high schools, with total enrollment of 1928 white and 177 colored students. The average length of the school term in 1910 was 172.5. In the same year there were 993 teachers employed, of whom 857 were women and 136 men. The average monthly salary of men teachers in 1910 was \$78.40, and for women teachers \$38.76. The total amount expended for schools in the same year was about \$600,000. The only institutions for higher education are Delaware College for men at Newark, St. Joseph's Industrial School (Roman Catholic) at Clayton, and a State College for Colored Students at Dover. The last-named institutions are both for colored students.

Charities and Corrections. The State has no board in direct supervision of charitable and correctional institutions. The list of such institutions which are partially supported by appropriations by the State or county are as follows: State Hospital for the Insane, Farnhurst; New Castle County Hospital, Farnhurst; Ferris Industrial School, Marshallton; Delaware Industrial School for Girls, Wilmington; Delaware Orphans' Home for Colored Children, State Road. There are in addition several private institutions which receive appropriations from county or State. These include the Home for Aged Women at Wilmington, the Crittenton Home at Wilmington, and the Home for Friendless Children at Wilmington. Supervision of

the blind in the State is in the hands of the Delaware Commission for the Blind. There are, in addition to these, private hospitals and other institutions. A large part of the supervision of the public and semipublic institutions is in the hands of the Associated Charities at Wilmington. The Legislature of 1911 provided for the appointment by judges of the Superior Court of a probation officer to act for the whole State and for a juvenile court at Wilmington. Commissions were appointed by the same Legislature to report on child labor. This report was made to the Legislature of 1913, and a measure was enacted regulating the hours of labor for females, making a maximum of 10 hours per day or 55 hours per week in certain employments.

Militia. The organized militia comprises one regiment of infantry and one detachment of sanitary troops. The enlisted men on Jan. 1, 1913, numbered 441, and the officers 41. The designation is the Organized Militia of Delaware.

Finance. The report of the State Treasurer for the fiscal year 1913 shows receipts from all sources for that year of \$676,953. The disbursements for the same period were \$707,158. At the beginning of the fiscal year there was a balance of \$92,347, leaving a balance at the end of the fiscal year 1913 of \$61,749. The chief sources of revenue are licenses and fees from clerks of the peace, insurance and banking department, railroads, State corporation and franchise taxes, and the collateral inheritance tax. The chief expenditures are for education, charities, State institutions, highways, executive and judicial departments, public health, agriculture, legislature, and public defense. The bonded debt of the State at the end of the fiscal year 1913 was \$826,785. The Legislature of 1911 appointed a revenue and tax commission which was to report to the Legislature of 1913. A revenue law passed in the same session requires manufacturers to pay for an annual license and make an annual report.

Religion. The leading religious denominations are the Methodist Episcopal, Roman Catholic, Presbyterian, Protestant Episcopal, and Baptist. Wilmington is the see of the Protestant Episcopal diocese of Delaware and of the Roman Catholic diocese of Wilmington.

Government. Delaware has been governed under four constitutions. The first was adopted in 1776, the second in 1792, the third in 1831, and the present in 1897. The last named has been several times amended, but the amendments are not of great importance. Amendments may be proposed in the Senate or House of Representatives, and if two-thirds of each House vote for such amendment it must be published three months before the next general election. If the General Assembly next held after this election agrees to the amendment by a two-thirds vote, it becomes a part of the constitution. The General Assembly by a two-thirds vote has the power to provide for the submission to the electors at the general election next thereafter the question "Shall there be a convention to revise the constitution and amend the same?" If a majority of electors voting on the question shall decide in favor of a convention, the General Assembly at its next session shall provide for the election of delegates to such a convention at the next general election.

Legislature.—The legislative power of the State is vested in the General Assembly, consisting of the Senate and House of Representa-

tives. The House of Representatives is composed of 35 members chosen for two years. The Senate is composed of 17 members who are chosen for four years. The Legislature meets biennially.

Executive.—Executive officers include Governor, Lieutenant Governor, Attorney-General, Insurance Commissioner, State Treasurer, and Auditor of Accounts. The terms of the Governor and Lieutenant Governor, Attorney-General, and Insurance Commissioner are four years, and those of the State Treasurer and Auditor of Accounts are two years. The Governor may not be a candidate a third time for office.

Local and Municipal Government.—The hundred, or township, is the unit of local government. The city of Wilmington is governed by a modified-commission form of government, including the initiative and referendum. This was authorized by the Legislature of 1907. Sheriffs are elected for a term of four years and are not eligible for a second term.

Prior to 1913 there was a primary law which applied only to New Castle County. The Legislature of that year extended this law to Kent and Sussex counties, thereby covering the entire State. This primary law provides for the nominations of county officials, members of the General Assembly, and the election of delegates to the respective party nominating conventions.

Judiciary.—The judicial powers of the State are vested in a supreme court, a superior court, a court of chancery, an orphans' court, a court of oyer and terminer, a court of general sessions, and a registers' court. There are six State judges, one of whom is chancellor, one chief justice, and the other four associate justices. The chancellor, chief justice, and associate justices are appointed by the Governor and confirmed by the Senate. The term of service is 12 years. By an amendment adopted in 1913 the chief justice and the four associate justices compose the supreme court, the court of general sessions, and the court of oyer and terminer. The chancellor presides over the court of chancery. The orphans' court in each county consists of a chancellor and a resident associate judge of the county.

Suffrage and Elections.—Every male citizen of the age of 21 years and over who has been a resident for one year next preceding an election and for the last three months a resident of the county and for the last 30 days a resident of the hundred, or election district, in which he may offer to vote and in which he shall have been registered, is entitled to vote. Each voter, however, is required to be able to read the constitution of the State in the English language and to write his name. Prior to 1907 each voter at the time of his registration was required to pay a fee of \$1 for the use of the county wherein the registration was made. The Legislature in the year noted passed an amendment abolishing this provision.

General elections are held biennially on the Tuesday next after the first Monday in the month of November. The Legislature has passed several measures providing for the secrecy and purity of the ballot. The constitution contains strong provisions against giving or receiving bribes for voting.

History. The aboriginal inhabitants of the region belonged to the Lenni Lenape family, but Iroquois hunting parties frequently traversed the country. The name "Delaware" was first

applied to the bay which Lord de la Warr entered in 1611. Mey, a Dutch explorer, built Fort Nassau near the site of Philadelphia in 1623, and in 1631 a Dutch company, headed by De Vries, established a colony on Lewes Creek, near Cape Henlopen, which the Indians destroyed. In 1638 Swedes erected a fort on Christiana Creek, named the country New Sweden, and subsequently established a military post on the island of Tinicum, below Philadelphia. The Dutch considered this an invasion of their territory and set up Fort Casimir, near the site of the present New Castle. A settlement on the Delaware, made in 1641 near the present site of Salem, N. J., by a colony from New Haven, existed for only two years. After 1642 the Swedes and the Dutch came into open conflict. The Swedes took Fort Casimir in 1654, but were driven out in the following year by the Dutch, who seized the whole country. When New Netherlands came into the possession of the English, the settlements on the Delaware were claimed both by the Duke of York and by Lord Baltimore. In 1683 William Penn received the territory in fee from the Duke of York and effected a compromise with Lord Baltimore, and for 20 years Delaware was governed as a part of Pennsylvania under the name of the "Territories or Three Lower Counties on the Delaware," each county sending six representatives to the General Assembly. In 1703 Delaware established a separate legislature, but continued to acknowledge the authority of the Governor of Pennsylvania till the Revolution. In the War of Independence the "Blue Hen's Chickens," as the Delaware volunteers were called, rendered efficient service. The State was the first to ratify the Federal Constitution, Dec. 7, 1787.

Though a slaveholding State, Delaware remained faithful to the Union in 1861 and contributed nearly 14,000 troops to the Federal armies. In the southern part of the State, however, the Confederate sentiment was strong, and large numbers went to join the forces of the South. The Fourteenth Amendment was denounced by the Legislature, and though no forcible attempts were made, as in the South, to hamper the negroes in the exercise of their newly acquired civil and political rights, the feeling of race hatred prevailed for a long time after the war.

The period since 1865 has witnessed a remarkable growth of the railway system, the development of the fruit industry, and the rise of Wilmington as a shipbuilding and manufacturing centre. The rapid growth of Wilmington in population since 1873 has created great opposition to the prevailing system of representation in the Legislature as being unfair to the inhabitants of that city. This is owing to the fact that the State representatives are apportioned arbitrarily among the three counties, with the result that New Castle County, containing the city of Wilmington, with an industrial population one and a half times that of the agricultural counties of Sussex and Kent, has always been in a hopeless minority. From 1788 to 1852 Delaware was a Federal or Whig State in national elections excepting in 1820, when it cast its vote for Monroe. Since 1852 it has been a Democratic State with the exception of the years 1872, 1896, 1900, 1904, and 1908. In State politics it was consistently Democratic from 1865 to 1869. The Republican party in the latter

year won a majority in the State Legislature, and from that time, with the exception of short periods, was in political control of the State until 1913. The period from 1893 to 1906 was marked by one of the most remarkable instances of the domination of a political party by one man that has occurred in the history of the United States. In consequence of the political ambitions of J. Edward Addicks (q.v.), the Republican party in the State was disrupted and corruption of the Legislature and electorate became notorious throughout the country. In the struggle between Addicks and the opposing faction the Legislature was several times deadlocked, and from 1901 to 1903 the State was without representation in the United States Senate. Not until June 13, 1906, when Henry A. Du Pont, representing the Regular Republicans, was elected to the Senate, did Addicks abandon the attempt to control the politics of the State and to have himself elected to the Senate. On the expiration of the term of Senator Allee in 1907, Harry A. Richardson was elected Senator.

In the presidential election of 1908 Taft received 25,014 votes and Bryan 22,071. In the presidential election of 1912 Wilson received 22,031 votes, Taft 15,997, and Roosevelt 8886. The Democrats elected all State officers except Governor, and elected also a majority of the Legislature, which insured the election of a Democrat as Senator in 1913 to succeed Senator Richardson. Willard Saulsbury was elected on Jan. 29, 1913, for the term expiring March 3, 1919.

The question of liquor regulation has been a troublesome one. The local-option law divides the State into four districts, one of which includes the city of Wilmington, another the rural part of New Castle County (in which is Wilmington), and the others Kent and Sussex Counties. In an election held in 1907 two of these districts voted for no license, and the other two for license. In the city of Wilmington and in rural New Castle County license was successful; while Kent and Sussex counties gave large majorities to no license. This resulted in the prohibition in these counties of all liquors except for sacramental and medicinal purposes. Suits brought to test the validity of the law under which these elections were held resulted in a decision of the Supreme Court sustaining them in 1908. The Legislature of 1909 passed a measure providing for a resubmission of the question of licensing the sale of liquors in rural New Castle County, which, with Wilmington, voted in 1907 for license. At an election held in November, 1910, voters of the rural portion of New Castle County again voted for license by a majority of 748, thus all New Castle County remained license, while Kent and Sussex counties continued no license. The State has one Representative in Congress, and three votes in the Electoral College.

Following is a list of the governors of the State from its first settlement to 1915:

COLONIAL GOVERNORS

(Swedish)

Peter Minuit	1638-40
Peter Hollander	1640-43
Johan Printz	1643-53
Johan Papegoza (acting)	1653-54
Johan Claudius Rising	1654-55

From 1655 to 1682 Delaware was under the rule of the Dutch and English governors of

New York, and from 1682 to 1776 its governors were those of Pennsylvania.

PRESIDENTS UNDER THE CONSTITUTION OF 1776

Johi McKinley	1777
Thomas McKean (acting)	1777
George Read (acting)	1777-78
Cesar Rodney	1778-81
John Dickinson	1781-82
John Cook (acting)	1782-83
Nicholas Van Dyke	1783-86
Thomas Collins	1786-89
John Davis (acting)	1789
Joshua Clayton	1789-93

STATE GOVERNORS

Joshua Clayton	Federalist	1793-96
Gunning Bedford	"	1796-97
Daniel Rogers (acting)	"	1797-99
Richard Bassett	"	1799-1801
James Sykes (acting)	"	1801-02
David Hall	"	1802-05
Nathaniel Mitchell	"	1805-08
George Truitt	"	1808-11
Joseph Haslett	"	1811-14
Daniel Rodney	"	1814-17
John Clark	"	1817-20
Jacob Stout (acting)	"	1820-21
John Collins	Dem.-Rep.	1821-22
Caleb Rodney (acting)	"	1822-23
Joseph Haslett	"	1823-
Charles Thomas (acting)	"	1823-24
Samuel Pavynter	Federalist	1824-27
Charles Polk	"	1827-30
David Hazard	"	1830-33
Caleb P. Bennett	Amer.-Rep	1833-36
Charles Polk (acting)	"	1836-37
Cornelius P. Comegys	Whig	1837-41
William B. Cooper	"	1841-45
Thomas Stockton	"	1845-46
Joseph Maull (acting)	"	1846-
William Temple (acting)	"	1846-47
William Tharp	Democrat	1847-51
William H. Ross	"	1851-55
Peter F. Causey	Whig-Know-Nothing	1855-59
William Burton	Democrat	1859-63
William Cannon	Republican	1863-65
Gove Saulsbury (acting)	Democrat	1865-67
Gove Saulsbury	"	1867-71
James Ponder	"	1871-75
John Cochran	"	1875-79
John W. Hall	"	1879-83
Charles C. Stockley	"	1883-87
Benjamin T. Biggs	"	1887-91
Robert J. Reynolds	"	1891-95
Joshua H. Marvel	Republican	1895-
William T. Watson (acting)	Democrat	1895-97
Ebe W. Tunnell	"	1897-1901
John Hunn	Republican	1901-05
Preston Lea	"	1905-09
Simeon S. Pennewell	"	1909-13
Charles R. Miller.	"	1913-

Consult: Scharf, *History of Delaware* (2 vols., Philadelphia, 1888). Conrad, *History of the State of Delaware* (Wilmington, 1910). Messersmith, *Government of Delaware* (New York, 1910); Hassee, *Index of Economic Material in the Documents of the United States of Delaware* (Washington, 1910); Pyle, *Once Upon a Time in Delaware* (Wilmington, 1912).

DELAWARE. A city and the county seat of Delaware Co., Ohio, 24 miles north of Columbus, on the Whetstone (Olentangy) River, and on the Cleveland, Cincinnati, Chicago, and St. Louis, the Pennsylvania Company, and the Hocking Valley railroads (Map, Ohio, E 5). It is the seat of the Ohio Wesleyan University (q.v.) (Methodist Episcopal), opened in 1844, and contains the University and Carnegie libraries and was the birthplace of Rutherford B. Hayes. There are mineral springs noted for medicinal properties. The city is in a rich agricultural and stock-raising region, carries on a considerable trade, and has foundries, railroad repair shops, clay works, and manufactures chairs, carriages, building material, gloves, flour, woollens, lumber, shoes, gasoline engines, cigars,

etc. Delaware, incorporated in 1827, is governed by a mayor, elected every two years, and a municipal council. Pop., 1900, 7940; 1910, 9076; 1914 (U. S. est.), 9500.

DELAWARE (from the Delaware River). One of the most important tribes of Algonquian stock, originally occupying what is now New Jersey and the Delaware River basin, eastern Pennsylvania, and southeastern New York. They call themselves *Lenni Lenape*, 'true men,' and claimed and were accorded precedence over nearly all the other tribes of Algonquian kinship. They had a number of subtribes in three principal divisions, of which the Munsee (q.v.) or Wolf tribe differed considerably from the others. They were friendly with the Dutch and Swedish colonists, and in 1682 made the celebrated treaty with William Penn, which was faithfully kept on both sides for over half a century. German Moravian missionaries, among whom were the devoted Zinzendorf, Zeisberger, and Heckewelder, labored among them with great success. Through the aggression of the later settlers, backed by the powerful Iroquois, they were finally compelled to retire to the Susquehanna and upper Ohio region, in consequence of which they became embittered against the English colonists and threw their whole strength with the French side in the French and Indian War of 1754-63. In the Revolution they joined with the British against the Americans and, with other tribes of the Ohio valley, continued the struggle until crushed by Wayne and compelled to accept the Treaty of Greenville, by which, in 1795, the allied tribes ceded nearly all their ancient claims in what is now Pennsylvania and Ohio. During this struggle occurred the massacre of the peaceful Christian Delawares at Gnadenhuetten, Ohio, in consequence of which the remaining converts fled to Canada. By successive removals the larger portion of the tribe drifted from Indiana to Missouri and Kansas, a considerable band settling by Spanish permission in eastern Texas. The main body removed in 1867 from Kansas to the Indian Territory (Oklahoma) and became incorporated with the Cherokee Nation. Of the Delaware there are now but 914 and of the Munsee, 71, residing chiefly in Oklahoma. Consult Harrington, in *American Anthropologist* (1913), and Skinner, *Report Archaeological Survey of New Jersey* (1913).

DELAWARE BAY. A bay on the Atlantic coast of the United States, between the States of Delaware and New Jersey (Map: New Jersey, B 5). It receives the Delaware River, whose estuary gradually merges into the bay. It is about 50 miles long to where it contracts to a width of 4 miles. Its greatest width is about 28 miles, and the width at the entrance, between Cape May, in New Jersey, and Cape Henlopen, in Delaware, is about 12 miles. The depth of the channel varies from 30 to 60 feet, but much of the bay has less than 30 feet of water. A breakwater at Cape Henlopen, constructed by the United States government, forms a large and safe harbor from 24 to 35 feet deep. Government lighthouses are maintained at the entrance to the bay and also at a number of places within the bay, not only to mark points on the shore, but also shoal places in the channel. A large tonnage of coast and foreign shipping passes through the bay to and from Wilmington, Chester, and Philadelphia.

DELAWARE COLLEGE. An educational

institution founded at Newark, Del., in 1833. In 1859 the college was closed and was not reopened until 1870, when it was made beneficiary of the Congressional Act of 1862 granting public lands to the several States for the purpose of establishing colleges of agriculture and the mechanic arts. Under a further congressional act known as the Hatch Bill, an Agricultural Experiment Station was established at the college in 1887. A second bill, known as the Adams Bill, was passed, and the college derives from these two funds, for experimentation, the annual sum of \$30,000. In 1890 a supplementary bill, known as the Morrill Bill, was passed and in 1897 a bill known as the Nelson Bill, giving the college an annual appropriation of \$40,000. The charter which heretofore had been renewable every 20 years, was at the session of the Legislature in 1913 made permanent; at the same time the State Legislature appropriated \$30,000 annually for five years for the purpose of putting up buildings suitable for opening a college for women in connection with Delaware College, to be opened in September, 1914. It is entirely distinct from Delaware College, having separate classrooms, libraries, and buildings, and is a coordinate college rather than a coeducational one. At the beginning of 1914 the college had property valued at \$400,000 and a total annual income of \$97,480. The library contains 18,000 volumes. The president in 1914 was George A. Harter, M.A., Ph.D.

DELAWARE RIVER. A river of the eastern United States. The source of the main, or west, branch, is a small lake in Scholarie Co., N. Y., very near the Delaware County line, on the west slope of the Catskill Mountains, 186 feet above sea level (Map: New Jersey, C 11). It flows in a southwesterly course to Deposit, a distance of about 100 miles, where it receives the Oquaga Creek, an important tributary, and turns sharply to the southeast and soon forms the boundary between Pennsylvania and New York, receiving at Hancock the waters of the eastern branch, which also rises in the Catskills. At Port Jervis, N. Y., where it becomes the boundary between Pennsylvania and New Jersey, it turns to the southwest and flows 40 miles along the base of the Shawangunk Range to Delaware Water Gap (q.v.), thence generally southward to Easton, Pa., thence southeast to a point just below Trenton, thence southwest again past Philadelphia and Chester, Pa., where it begins to broaden into an estuary, which gradually widens into Delaware Bay. In its lower course it separates New Jersey from Delaware. Its length is about 360 miles to the head of Delaware Bay, or about 410 miles including the bay, and it drains an area of 12,012 square miles, of which one-fourth is in New York, over one-half in Pennsylvania, and about one-fifth in New Jersey. Its mean discharge at Lambertville has been estimated at 18,600 cubic feet per second. It has a considerable fall and furnishes extensive power at Trenton, where it crosses the Fall Line (10 to 15 feet fall), at Lambertville (Welles's Falls, 14 feet), at Belvidere (Foul Rift, 23 feet), and at Port Jervis (30 feet). Its chief tributaries are the Schuylkill (q.v.), the Lehigh (q.v.), and the Lackawaxen, from Pennsylvania, the Monacaup and the Neversink from New York, and the Musconetcong and Maurice from New Jersey. It is navigable for large ships to Philadelphia and for steamboats to the head of tidewater at Trenton. It is sel-

dom that navigation is closed by ice below Philadelphia. A canal parallels the left bank of the river from Easton, Pa., to Morrisville (opposite Trenton), and then cuts across a bend to Bristol. A canal also connects Trenton with New Brunswick (on the Raritan River), and another crosses New Jersey from near Phillipsburg to Jersey City on the Hudson River. A fourth canal parallels the Lehigh River and connects Mauch Chunk with Easton, while a fifth parallels the Lackawaxen River from Honesdale, Pa., to Lackawaxen on the Delaware, and parallels the Delaware to Port Jervis.

DELAWARE WATER GAP. A low gap and narrow gorge in the Kittatinny Range of the Appalachian Mountains on the borders of Pennsylvania and New Jersey, near Stroudsburg, Pa. (Map: Pennsylvania, L 5). The Delaware River flows through the gap. The steep mountain sides rise to a height of 1400 feet above the stream, forming very picturesque scenery, which makes the region a popular summer resort. It is reached by rail from Philadelphia (108 miles) and New York (88 miles).

DE LA WARR, or DELAWARE, THOMAS WEST, LORD (1577-1618). A Colonial governor of Virginia. He succeeded his father as Baron De la Warr and became a member of Queen Elizabeth's Privy Council in 1602. In 1609 he became a member of the Council of Virginia and in February, 1610, was appointed first Governor and captain-general of Virginia, arriving at Jamestown just in time to prevent the original colonists from abandoning the settlement. Though he lived with ridiculous pomp, he was an able and energetic officer and infused new life into the previously mismanaged colony. He planted a small settlement on the site of the present Hampton and built two forts, Henry and Charles, named in honor of King James's sons. In March, 1611, he sailed for the West Indies for the purpose of recovering his health, but was driven by a storm into the river which now bears his name. He never returned to Jamestown, though he remained the nominal Governor, and contributed large sums of money to the enterprise. In 1618, in answer to the urgent request of the colonists, then smarting under Argall's oppression, he sailed again for America, but died on the voyage. His *The Relation of . . . Lord De la Warr . . . to the Council of Virginia*, originally published in 1611, was republished in 1858. Consult Neill, *The Early Settlement of Virginia* (1878).

DELBOEUF, del'boef, JOSEPH REMI LÉOPOLD (1831-96). A Belgian philosopher, born in Liège. In 1860 he became an instructor in the normal school of his native town, in 1863-66 was professor of philosophy in Ghent and from 1866 in Liège. He is perhaps best known for his contribution to psychophysics, in his method of mean gradations, whereby he sought to establish an accurate scale of intensities in sensation capable of mathematical expression. His works include: *De la moralité en littérature* (1861); *De la psychologie comme science naturelle, son présent et son avenir* (1875). *Examen critique de la loi psychophysique* (1883); *Le sommeil et les rêves* (1885); *La matière brute et la matière vivante* (1887). For a criticism of his psychophysical work, consult Bergson, *Time and Free Will* (1910).

DELBRÜCK, del'bruk, BERTHOLD (1842-). A German comparative philologist and Sanskrit scholar, born in Puthus. He studied at

the universities of Halle and Berlin and was appointed professor of comparative philology and Sanskrit in Jena in 1869. His works include: *Einleitung in das Sprachstudium* (1880; 4th ed., 1904; Eng. trans., 1882); *Syntaktische Forschungen*, with E. Windisch, vols. i-v (1871-88); and *Vergleichende Syntax der indogermanischen Sprachen*, which forms volumes iii, iv, and v of Brugmann and Delbrück's *Grundriss der indogermanischen Sprachen* (Strassburg, 1897-1913) and *Grundfragen der Sprachforschung* (1901); *Einleitung in das Studium der indogermanischen Sprachen* (1904; 1908); *Synkretismus, ein Beitrag zur germanischen Kasuslehre* (Strassburg, 1907); *Germanische Syntax* (Leipzig, 1909-11); *The Classical Quarterly*, vol. vii, p. 216 (London, 1913).

DELBRÜCK, HANS (1848-). A German historian of the art of war. He was born in Bergen, on the island of Rügen, and was educated in Heidelberg, Greifswald, and Bonn. He served as officer in the Franco-German War. In 1874 he became preceptor of Prince Waldemar of Prussia, a brother of Emperor William II, and for a time was Von Ranke's secretary. He was a deputy in the Reichstag in 1882-83 and 1884-90. In 1883 he became an editor of the *Preussische Jahrbücher*, assuming charge in 1899. In 1885 he became professor of modern history at the University of Berlin. His works include: *Die Perserkriege und die Burgunderkriege* (1887); *Die Strategie des Perikles erläutert durch die Strategie Friedrichs des Grossen* (1890); *Friedrich, Napoleon, Moltke, Aeltere und neuere Strategie* (1892); *Geschichte der Kriegskunst im Rahmen der politischen Geschichte* (3 vols., *Das Altertum*, 1900, *Romer und Germanen*, 1902; *Das Mittelalter*, 1907), his most important work; *Erinnerungen, Aufsätze, und Reden* (1902). *Numbers in History* appeared in 1914. He published an edition of Schulhess's *Europäischer Geschichts-Kalender*. Consult the introduction to *Delbrück-Festschrift* (Berlin, 1908).

DELBRÜCK, MARTIN FRIEDRICH RUDOLF VON (1817-1903). A Prussian statesman, born in Berlin. He came of a distinguished family, his father, Johann Friedrich Gottlieb Delbrück (died, 1830), having been preceptor of the two Prussian princes afterward respectively known as King William IV and Emperor William I. He studied in Halle, Bonn, and Berlin. After an association of 15 years with the Prussian Bureau of Commerce (organized as the Ministry of Commerce in 1848), he became in 1859 Director of the Department of Commerce and Industry, in which capacity he skillfully consolidated the German Zollverein and negotiated important treaties with France (1862) and subsequently with England, Belgium, Italy, and other European states. In August, 1867, through the aid of Bismarck, he was advanced to the presidency of the Chancery of the North-German Confederation. He also became a Prussian minister of state in 1868, and in both positions, in which he was virtually the representative of the "Iron Chancellor," he displayed a strict adherence to constitutional principles, notwithstanding the great difficulties frequently encountered in the defense of the measures advocated by Bismarck. In October, 1870, he was sent on diplomatic missions to the various courts of south Germany, in order to promote the unification of the country, and the ultimate con-

clusion of the treaties at Versailles (Nov. 15, 23, and 25, 1870) was directly due to the skill and tact with which Delbrück had discharged this important mission. He was President of the Imperial Chancellery until 1876, when Bismarck began to inaugurate that programme of protective tariffs and of state railway ownership which Delbrück as the representative of free trade had ever strenuously opposed. His literary productions include the anonymous monograph *Der Zollverein und das Tabaksmopol* (1857) and the legal treatise entitled *Der Artikel 46 der Reichsverfassung*. After vainly endeavoring from 1879 to 1881 to defeat the new policies, he retired to private life. He was honored by the Emperor in 1896 with the Order of the Black Eagle.

DELBRÜCK, MAX EMIL JULIUS (1850-). A German chemist, born in Bergen. He studied chemistry in Berlin and in Greifswald. In 1872 he was made assistant at the Academy of Trades in Berlin and in 1881, after several years of connection with various experiment stations, he was appointed instructor at the Agricultural College (also in Berlin). He was given a professorship in 1899. His researches resulted in technical contributions of the highest value to the fermentation industries. He was one of the editors of the *Zeitschrift für Spiritusindustrie* (1867) and of the *Wochenschrift für Brauerei*.

DELCASSÉ, dé'l'kà'sé', THÉOPHILE (1852-). A French statesman, born at Pamiers and educated at Toulouse. He wrote able articles on foreign politics contributed to various journals, notably Gambetta's *La République Française* and *Paris*, and in 1889 was elected to the Chamber of Deputies. He was Undersecretary of State for the Colonies in 1893, and in 1894-95 Colonial Minister in the second Dupuy cabinet. In the Brisson cabinet of June, 1898, he received the portfolio of Foreign Affairs and retained office for seven years. He brought about the alliance with Russia, established relations of amity with Italy, drew into closer touch with Spain, entered into relations of intimate friendship with Great Britain, and negotiated a settlement of the difficulties connected with the French occupation of Fashoda (q.v.). The Agreement with Great Britain of April 8, 1904, embodied a series of mutual concessions. The German government regarded M. Delcassé's policy of alliances as aiming at Germany's isolation in Europe. Confronted by the threat of war over the French policy in Morocco (q.v.), the Premier, M. Rouvier, apparently demanded the resignation of M. Delcassé, June 6, 1905, and took the portfolio of Foreign Affairs himself. In May, 1906, Delcassé was reelected to the Chamber of Deputies. In 1909 he was president of a committee to inquire into naval affairs; the report it made angered Clemenceau into an attack on Delcassé, but the Chamber refused a vote of confidence, and Clemenceau's ministry had to resign. In 1910 Delcassé's elaborate programme for naval improvement was adopted. In March-June, 1911, he was Minister of Marine in Monis's cabinet; and he held this portfolio in the Caillaux and Poincaré ministries of 1911 and 1912; and succeeded De Selves as Minister of Foreign Affairs in January, 1912. In 1913, while still holding his seat in the Chamber, he was in St. Petersburg on a temporary mission as French Ambassador.

DEL CREDERE (It., upon faith or credit, from Lat. *credere*, to believe). A phrase of the law merchant, which has been adopted into the commercial codes of Europe as well as into the common-law system of England and America. A *del credere* agent is one who, in consideration of an additional compensation, undertakes to become personally responsible to his principal for the payments and other obligations which accrue to him as the result of his dealings. His undertaking is in the nature of a continuing guarantee that his principal shall suffer no loss through the default of those to whom he has extended credit on the principal's account. The class of agents known as factors are commonly employed on this basis. The agent is said to be acting under a *del credere* commission or authority. See FACTOR; PRINCIPAL AND AGENT.

DEL'EB PALM. See PALMYRA PALM.

DELÉCLUZE, de-là-klu'z', ETIENNE JEAN (1781-1863). A French art critic, painter, and novelist. He was born in Paris, studied in the atelier of David, and obtained a gold medal in 1808 with "The Rape of Europa," but after 1816 devoted himself to literature. In his art criticism, contributed to the *Journal des Débats* and other papers and magazines, he championed exclusively the classical style of David and attacked the new Romantic school, especially the painter Delacroix. He wrote: *Précis d'un traité de la peinture* (1828). *Louis David, son école et son temps* (1855). *Souvenirs de soixante années* (1862). Among his romances are *Mademoiselle Justine de Laron* (1832) and others, collected as *Romans, contes et nouvelles* (1843).

DELECTABLE MOUNTAINS, THE. The pastures of "the chosen," in *Pilgrim's Progress*.

DELED'DA, GRAZIA (1873-). An Italian novelist, born at Nuoro, Sardinia. Her numerous books reflect realistically the peasant life of Sardinia, of which she is the best modern interpreter. She is inclined to depict characters of virtue and idealism in tragic conflict with sad conditions of life. Typical works are: *Racconti sardi*; *Il vecchio della montagna*; *Canne al vento*, trans. of *Dopo il divorzio* (London, 1905). Consult the *Fortnightly Review*, vols. lxxxi, lxxxiii, lxxxiv.

DELEGATE, APOSTOLIC. See LEGATE.

DELEGATES, HIGH COURT OF. In England, the supreme court of appeal in ecclesiastical causes. Before the time of Henry VIII the practice had become established of taking ecclesiastical causes on appeal from the "ordinary," or bishops', courts to the court of Rome. By 24 Hen. VIII, c. 12, this practice was prohibited, and appeals were directed to be heard by the archbishops of the several provinces. By 25 Hen. VIII, c. 19, it was directed that appeals should finally be referred to the King in council, and his Majesty was by the same statement empowered to issue a commission under the great seal to hear the appeals. The court established in pursuance of this act was known as the High Court of Delegates. It consisted, in ordinary cases, of a puisne judge from each of the three superior courts of common law (King's Bench, Common Pleas, and Exchequer) and of three or more doctors of the civil law. After sentence had been pronounced by the court of delegates it was competent for the King to grant a commission of review, but this power was rarely exercised. By 2 and 3 Wm. IV, c. 92, the court of delegates was abolished, and its jurisdiction

transferred to the King in council, and by 3 and 4 Wm. IV, c. 41, and 6 and 7 Vict., c. 38, all appeals from ecclesiastical courts go to the judicial committee of the Privy Council. See ADMIRALTY; ECCLESIASTICAL COURTS; PRIVY COUNCIL.

DELEGATION (Fr. *délégation*, Lat. *delegatio*, from *de*, away, from + *legare*, to send with a commission). The term formerly applied in Lombardy, Venetia, and the Papal States, both to the governing court of a province and to the province itself. There were nine delegations in Lombardy and eight in Venetia, each of which was presided over by a delegate, a vice delegate, and various subordinates. In the States of the Church there were 17 delegations originally established, but this number was not strictly adhered to. The delegate was always a prelate and directly appointed by the Pope. If he was a cardinal, he was called a legate, and his province a legation. In Austria-Hungary the Austrian and Hungarian delegations constitute the deliberative assembly for the dual monarchy. See AUSTRIA-HUNGARY.

DELEHAYE, dè'le-è', HIPPOLYTE (1859-). A Belgian Catholic scholar, born in Antwerp. He entered the Society of Jesus in 1876, studied at Louvain and Innsbruck, was ordained a priest in 1890, and in 1891 became a member of the association of Bollandists. He was one of the editors of the *Acta Sanctorum* and of the *Analecta Bollandiana* and wrote important separate volumes on hagiology. Mrs. V. M. Crawford published (1907) an English version of one of his works under the title *Legends of the Saints: an Introduction to Hagiography*.

DE LEON, EDWIN (1828-91). An American journalist, diplomatist, and author, born in Columbia, S. C. In 1862 he became diplomatic agent in Europe during the Civil War and afterward Consul General of the United States at Cairo. He wrote: *Thirty Years of my Life on Three Continents*; *The Khedive's Egypt* (1878); *Askaros Kassis, the Copt* (1870); and *Under the Stars and Under the Crescent* (1887).—His younger brother, THOMAS COOPER DE LEON (1839-), also born in Columbia, is the author of *Creole and Puritan* (1889); *The Puritan's Daughter* (1891); *Four Years in Rebel Capitals* (1892), historical reminiscences, *The Rending of the Solid South* (1895); *Crag-Nest* (1910).

DELEPIERRE, dèl'pè-àr', JOSEPH OCTAVE (1802-79). A Belgian author. He was born in Bruges and studied in Ghent. In 1849 he was appointed Belgian Consul to London and filled that position until 1877. Besides editions of older works, such as *Aventures de Tiel Ulen-spiegel* (2d ed., 1840) and *Maaronéana* (1852), he published: *Les traditions et légendes des Flamands* (1834); *Histoire littéraire des fous* (1860); *La parodie* (1871); *Tableau de la littérature du centon* (2 vols., 1875); *L'Enfer: Essai philosophique et historique* (1876).

DELESCLUZE, de-là klüz', LOUIS CHARLES (1809-71). A French politician and journalist, who took a prominent part in revolutionary conspiracies in the time of Louis Philippe, of the Republic of 1848, of the Second Empire, and the Third Republic. He was many times imprisoned and in 1857 was deported to Cayenne, whence he returned in 1859 under the amnesty. In 1868 he started the *Réveil*, a most radical paper, advocating the ideas of the Association inter-

nationale des travailleurs, known as the *Internationale*. After the collapse of the Empire he organized the revolt against the Government of National Defense, and for this was arrested, but was soon released. Elected to the National Assembly (1871), he resigned from that body on being chosen a member of the Commune, of which he was a conspicuously desperate and reckless leader during the seige of Paris. Seeing the collapse of the Commune, he sought and found death on the last barricade held by the revolutionists in the Rue d'Angoulême. His sufferings while a prisoner he has described in *De Paris à Cayenne, journal d'un transporté* (1869).

DE LESSEPS. See LESSEPS.

DELFT (Dutch, ditched; connected with A.S. *delf*, ditch, from *delfan*, Dutch *delfen*, to dig, OHG. *bi-telban*, to bury, Eng. *delve*). A quaint old town of the Netherlands, situated on the Schie, about 6 miles southeast of The Hague and 8 miles northwest of Rotterdam (Map: Netherlands, C 2). It is intersected by many canals lined with trees and contains a number of interesting buildings. In the Prinsenhof, now converted into a museum with many fine paintings, William I of Orange was assassinated on July 10, 1584. The Oude Kerk, a Gothic structure, dating from the fifteenth century, contains monuments of famous Dutchmen, including one of Admiral Tromp, and the Gothic Nieuwe Kerk, dating from the fourteenth century, is surmounted by a tower 375 feet high, containing a famous set of chimes. The church contains the family vault of the house of Nassau, the mausoleum of William I, and the remains of Hugo Grotius, the statesman and scholar, a native of Delft, who has also been commemorated by a bronze statue. The town hall dates from 1618 and contains interesting paintings. The town's educational institutions include a polytechnical school, with over 1100 students, and a training school for colonial officials; it also has a powder magazine and arsenal. In former times Delft was especially famous for its earthenware, known as Delftware, and made in imitation of Chinese and Japanese porcelains. This industry, after a period of complete decline, has been revived of late. There are also arms and ammunition factories, and other manufactures comprise carpets, cloths, cigars, soap, oil, mathematical instruments, and leather. The town was founded in the eleventh century, received a charter in 1246, and was almost destroyed in 1536 by a fire and in 1654 by the explosion of a powder magazine. Pop., 1900, 31,582; 1910, 34,485.

DELFTSHAVEN, delfts'hä'ven. An old town on the river Meuse, in South Holland, since 1886 a suburb of Rotterdam (q.v.). The Pilgrim Fathers embarked at Delftshaven for Southampton, July 22, 1620.

DELGADA, dèl-gà'dà. See PONTA DELGADA.

DELHI, dèl'è. The name of a former division of the Punjab, British India (Map: India, C 3). Out of the Delhi division was erected, Oct. 1, 1912, the new Province of Delhi, and the remainder took the name of Ambala division. Ambala is the southeastern division of the Punjab, being separated from Agra on the east by the Jumna River; it lies entirely in the plains, with the exception of the small district of Simla and the hill station of Kasauli. The area is 14,838 square miles, and the population (1911 census) 3,784,408. The detached Province of

Delhi has 557 square miles, with 391,828 inhabitants. The Delhi division therefore had an area of 15,395 square miles and a population of 4,176,236 against 4,587,150 in 1901 and 4,434,751 in 1891. In 1901 about 71 per cent of the population was Hindu and about 26 per cent Mohammedan; Christians numbered 12,108, of whom less than 4000 were natives. The division is mainly agricultural and comprises 7 districts. The capital is Ambala (pop., 1911, 80,131). Other towns of importance are Bhiwani, Rewari, Panipat, Karnal, Rohtak, and Simla.

DELHI. The smallest province of British India. It was constituted, Oct. 1, 1912, as a result of the removal of the seat of the Indian government from Calcutta to the city of Delhi. The province, which is administered by a chief commissioner, consists of the city of Delhi and outlying districts with an aggregate area of 557 square miles, detached from the old Delhi division of the Punjab. Pop., 1911, 391,828.

DELHI, also **DEHLI** or **DILLI**. The former capital of the Mogul Empire, now the capital of Delhi Province and of British India (Map: India, C 3). It is situated on the west bank of the Jumna River, in lat 28° 39' N. and long. 77° 15' E., distant by rail 956 miles from Calcutta, 982 miles from Bombay, and 907 miles from Karachi. The city, which extends over 2 miles along the river, is inclosed on three sides by a stone wall $3\frac{1}{4}$ miles long; it was built by Shah Jehan and reconstructed, early in the nineteenth century, by the British. In the eastern part of the city and directly on the river lies the old Mogul palace, inclosed on three sides by a wall of red sandstone; it is now called the Fort. To the northeast is the Salimgarh outwork, where the East Indian Railway enters the city by a fine bridge across the Jumna. To the northwest of the Fort is an open space containing official buildings and the Protestant church of St. James. South of this space and of the railway are the public gardens. The cantonment is in the southeast part of the city. The territory comprising these sections, and constituting nearly half the city, contrasts sharply with the native, or southwestern, portion, whose streets for the most part are narrow, crooked, and densely populated. The native part of Delhi, though largely a mass of mean houses, is interspersed with splendid mosques.

Delhi was rebuilt on its present site by Shah Jehan (whence it is called Shahjehanabad) at a time when the glory of Mogul architecture was at its zenith. It was Shah Jehan who built that pearl of all architecture, the Taj Mahal, at Agra, and it was he who built the splendid Imperial palace, or group, at Delhi (1638-48). This palace, or group walled on three sides, is an oblong, 3202 feet north and south (along the river), and 1600 feet east and west. It now contains the ugly British barracks, and much of its former splendor has been lost. Entrance is through a magnificent portal to a vaulted hall, 375 feet long, facing which is the music hall; beyond is the great court, in which stands the hall of public audience; and beyond this is the painted chamber. It was in the hall of public audience that the peacock throne, which bore a fully expanded peacock's tail done in gems, used to stand, in a recess of the back wall; it is estimated that the throne was worth some £6,000,000. The buildings just mentioned constitute a central range, north of

it is the private audience hall. The latter, which is close to the river, has been called the most ornamented of all Shah Jehan's buildings. It abounds with delicate inlaid work and bears the inscription, in Persian characters, "If there is a heaven on earth, it is this—it is this!" The harem and private apartments of the palace lay south of the central range, covering a space about 1000 feet square.

Near the Chandni Chauk (Silver Street) is the Jama Masjid (Great Mosque), begun by Shah Jehan in the fourth year of his reign and finished six years later: it is one of the most noteworthy buildings of its kind in India on account of both its dimensions and its architecture. It stands on elevated ground, so that its front courtyard, which is 450 feet square and surrounded by a fine open cloister, commands a view of the city. The mosque, 261 feet long, has two graceful minarets at the front corners and three white marble domes; white marble also forms the interior paving as well as the lining of walls and roof. Mention should be made also of the Kali Masjid (Black Mosque), built, it is supposed, by an early Afghan ruler, the small Moti Masjid (Pearl Mosque), built by Aurangzeb, and the mosque of Roshan-ud-daula.

The principal street of Delhi is the Chandni Chauk, $\frac{3}{4}$ mile long and 74 feet wide. This street is lined with warehouses and with shops (notably those of dealers in gold and silver embroidery). Among its buildings of special note are the high clock tower and the city hall; the latter has a picture gallery, a public library, and a museum. The old palaces of the nobles have in large part disappeared. Beyond the city walls is a considerable population which is included in the municipality. Outside of the walls also are the Imperial tombs. The tomb of Humayun is about $3\frac{1}{2}$ miles from the Delhi Gate (south wall). It is an imposing square building of pink sandstone, surmounted by a white marble dome; it stands on a platform, 200 feet square, supported by cloisters, which is surrounded by a terraced garden and this by a battlemented wall. About a mile to the west are the tombs of the Imperial Mogul family, each inclosed by latticework of white marble. Here, too, are numerous small mosques, notably the one in memory of the saint Nizam-ud-din.

The Delhi College, founded in 1792, was the principal educational institution until 1877, when, in order to concentrate higher education, its endowment was transferred to the Punjab University at Lahore. The principal school now is the municipal high school (which occupies the old Residency), with six branch schools; there are several other high schools, a municipal industrial school, a normal school for vernacular teachers, and other educational establishments.

The industries of Delhi include the making of jewelry (for which the city has long been famous), gold and silver embroidery, articles of silver, brass, and copper ware, etc. In recent years western manufacturing has made considerable progress; there are cotton mills, flour mills, sugar mills, etc. The city carries on an extensive trade, especially in piece goods and grain. The municipality was created in 1850. Delhi has a drainage system, a good lighting system, and an ample water supply; of late its sanitary conditions have greatly improved. Pop., 1891, 192,579; 1901, 208,575; 1911, 232,837 (the increase being 11.6 per cent). In 1901

about 55 per cent of the inhabitants were Hindus and about 42 per cent Mohammedans; Christians numbered 2164.

The city of Indraprastha (ancient Delhi), unrivaled in its splendor among the cities of India, was situated on the opposite bank of the river. Its original foundations are supposed to date from the fifteenth century B.C. Its remains cover an area of about 30 miles in circumference. The authentic history of Delhi begins in 1193, when the city was taken by the Mohammedans. Thereafter under the first dynasties of its Afghan conquerors it was the centre of a mighty Mohammedan empire, reaching its highest power in the early fourteenth century. Although captured and sacked by Timur in 1398, Delhi remained under its Afghan emperors until 1526, when it was taken by Sultan Baber, who removed the capital to Agra, but under his son Delhi regained its former rank. In the latter part of the sixteenth century the city fell almost into utter decay, as the capital of the state was either at Agra or Lahore. Shah Jehan began the building of the modern city in 1638, and some of the finest edifices of Delhi belong to that period. At the beginning of the eighteenth century the decline of the Mogul Empire affected also the city of Delhi. In 1739 it was captured by the Persians, and, as a result of an attack by the natives on the invading army, many of the inhabitants were massacred and the city was despoiled of some of its finest treasures, including the peacock throne and the Koh-i-Nur diamond. In 1789 Delhi was captured by the Maharrattas, in whose possession it remained until 1803, when it was taken by Lord Lake, and has since remained in the possession of the British. The uprising of 1857 and the subsequent siege of the city form some of the most stirring events in the history of the British occupation of India. The invasion of the city by a handful of rebels from the cantonment of Meerut on May 10, 1857, was a signal for a general uprising in the city, as well as in northwestern India, and the rebels were soon joined by the native troops. The Europeans were mercilessly cut down, and the large powder magazine was exploded by the British officers, who were unable to defend it against the attacks of the natives. Europeans and friendly native troops began to arrive at the beginning of June, but it was not before September that the army of relief was strong enough for an assault on the city. On September 14 Delhi was entered by the British, but it was only after six days' fighting within the walls that the city was retaken. The British losses during the siege amounted to over 1000 killed and nearly 4000 wounded. The old Bahadur Shah, who was proclaimed Emperor by the mutineers, was exiled to Rangoon, and his death in 1862 marked the end of the Mogul dynasty. The city subsequently settled down into a prosperous railway and commercial centre. Because of its Imperial traditions, however, Delhi was selected as the scene of the Imperial Proclamation of Jan. 1, 1877, and of the Durbar in 1903, at which King Edward VII was proclaimed Emperor of India. The growing native unrest led King George V and his consort to visit India for their Imperial coronation. At the brilliant Durbar held at Delhi on Dec. 12, 1911, unexpected changes were announced for the administration of India, involving the transference of the capital from Calcutta to Delhi. On Oct. 1, 1912, the Punjab division of Delhi was con-

stituted as a new province. In 1913 Imperial and native endowments were announced for making Delhi the educational as well as the political centre of India.

Consult: Brown, *The Punjab and Delhi in 1857* (London, 1861); Chambers, *History of the Indian Revolt* (Edinburgh, 1859); Fanshawe, *Delhi, Past and Present* (London, 1902); Wheeler, *History of the Delhi Coronation Durbar* (ib., 1904); Festing, *When Kings Rode to Delhi* (ib., 1912).

DELHI, dĕl'hi. A town and the county seat of Delaware Co., N. Y., 66 miles (direct) west by south of Albany, on the Delaware River, and on the New York, Ontario, and Western Railroad (Map: New York, F 6). It is the seat of a State agricultural school and has silk mills and creameries. The water works are owned by the town. Pop., 1910, 1736.

DELIA. See DELOS; GREEK FESTIVALS.

DELIAN LEAGUE. See DELOS; GREECE, *History* (Ancient History).

DELIAN PROBLEM. See CUBE.

DELIBES, de-lĕb', CLÉMENT PHILIBERT LÉO (1836-91). A French composer, born at Saint-Germain du Val, Sarthe. He studied at the Paris Conservatory, where he won many prizes, and in 1853 became accompanist at the Théâtre Lyrique and organist at Saint-Jean et Saint-François. In 1865 he became second chorus master at the Opéra and in 1880 was made professor of composition in the Conservatory. In 1884 he became a member of the Institute, succeeding Victor Massé. Delibes became popular with his first operetta, *Deux sacs de charbon* (1855), and then wrote a number of comic operas and ballets, of which the most famous are: *Le roi l'a dit* (1873) and *Lakmé* (1883), operas; *Coppélia* (1870) and *Sylvia* (1876), ballets. They are famous for delicacy and brilliant, fairy-like orchestral effects. Consult A. Pougin, *Musiciens du XIXe siècle* (Paris, 1911).

DELIGHT OF MANKIND' (Lat. *amor ac dulcedo generis humani*). A title given to the Roman Emperor Titus, in admiration of his mildness and virtues. Consult Suetonius, *Titus*, i.

DELI'LAH (Heb., delicate). The name of a Philistine woman whom Samson loved. Her home was in the valley of Sorek. By her flattering blandishments she obtained from him the secret that his great strength lay in his locks, and, having cut these off while he lay asleep, she then treacherously betrayed the warrior, shorn of his strength, into the hands of his enemies (Judg. xvi. 4-31). See SAMSON.

DELILLE, de-lĕl', JACQUES (1738-1813). A French didactic poet and translator, born at Aigueperse, June 22, 1738. He achieved extraordinary popularity in the eighteenth century, but is now hardly read or thought readable. He mistook his prolix habit of paraphrasing for poetical expression; he would enumerate various characteristics and leave it to the reader's imagination to supply the name of the object described. His translation of Vergil's *Georgics* (1769) was esteemed at least equal to the original, and *Les jardins ou l'art d'embellir les paysages* (1782; enlarged ed., 1801) was deemed immortal. After the outbreak of the Revolution he followed the Emigration. He lived for a time in Switzerland, where he published *L'Homme des champs, ou les Géorgiques françaises* (1800). In 1801 he went to England, where he translated *Paradise Lost*. That same

year he returned to his seat in the Academy and his professorship of Latin and belles-lettres in the University of Paris and the Collège de France, which he held till blindness intervened. This, however, did not check the stream of his poetic production, which in these last years included *La pitié*, in four cantos (1803); Vergil's *Enéide* (1805); *L'Imagination*, in eight cantos (1806); *Les trois règnes de la nature* (1809); *La conversation* (1812). He died in Paris, May 1, 1813. Consult *Sainte-Beuve, Portraits littéraires*, vol. ii (Paris, 1864), and L. Audiat, *Un poète oublié: J. Delille* (ib., 1902).

DELIRIQUESCENCE (Lat. *delirescere*, to melt away, dissolve, from *de*, down, away + *liquere*, to be fluid, liquid). The term applied to the property which certain substances have of absorbing moisture from the air and becoming damp and even running into liquid. The substances possessing this property are said to be deliquescent. Caustic potash and the chlorides of calcium and magnesium are examples of deliquescent substances.

DELIRIUM (Lat., literally, being off the straight line, or furrow, from *de*, off, away + *lira*, furrow). A derangement of mind during illness, in which the intellect and the judgment are perverted or lost, while the imagination and the passions are often excited or at least left without control. The result is an incoherent or totally disordered course of action and speech, frequently attended by delusions or unreasonable beliefs, which the sound mind at once perceives to have no foundation in fact. Two types of delirium are recognized: *active* or *loud delirium*, in which the sufferer shouts, struggles, tries to escape from imaginary enemies and has to be forcibly restrained; *lour* or *muttering delirium*, in which the patient lies still, but is constantly engaged in incoherent and disjointed converse with himself or imaginary persons. Active delirium is the form most frequently observed in delirium tremens. Muttering delirium is characteristic of the later stages of typhoid fever. Delirium may occur during the invasion of pneumonia scarlet fever, smallpox, bubonic plague, or during uræmia, chorea, hysteria, epilepsy, etc. *Delirium tremens* (Lat., shaking delirium) is the result of long-continued alcoholic intoxication and may attack a "moderate drinker" during a single excessive indulgence. Delirium tremens is characterized by a restless, irritable state of the nervous system rather than by furious paroxysms of excitement (though these are not rare), by constant though ill-regulated and ineffectual attempts of the patient to occupy himself; by spectral illusions of horrible, terrifying, or very rarely amusing objects, such as animals, snakes, goblins, etc., or hallucinations of vision and hearing; by tremors of the hands and tongue; by loss of appetite, nausea, and vomiting; and by great wakefulness, the want of sleep being often protracted over many days and nights, with constant excitement of the senses, and the prostration of the vital powers from deficient nourishment. In treating delirium tremens bromides, chloral, rarely opium, strychnine, and other powerful drugs are used, with purgatives. Stimulants other than alcohol are frequently needed. The condition is very dangerous, as about 17 per cent of the patients die; and the use of drugs, of restraint when the patients are furious, and the direction of nourishment must be under the

administration of a physician. See **ALCOHOL; MANIA**.

DELIRIUM EBRIOSUM (Lat. *ebriosus* addicted to drink, from *ebrius*, drunk). An obsolete term, used to denote either the delirium accompanying acute alcoholism or, delirium tremens. In the former there are exaltation, garrulity, boastfulness, delusions of a grandiose character, followed by violent verbal abuse, passion, and often fierce anger without cause, which prompts the inebriated individual to break furniture, glassware, panes of glass in windows, etc. Delirium tremens is described under **DELIRIUM** (q.v.).

DELIRIUM NERVO-SUM, or TRAUMATICUM (Lat. *neruosus*, nervous; *traumaticus*, from Gk. *τραυματικός*, *traumatikos*, of wounds, from *τραύμα*, *trauma*, wound). A term employed by Dupuytren to designate an attack of delirium with tremors, which frequently supervenes on severe bodily injuries, such as gunshot wounds, burns, and fractures—chiefly met with in large hospitals—in the case of persons of weakly constitution, and who are irritable and nervous and have been intemperate in their habits. Delirium nervosum is an obsolescent term. It is really a form of delirium tremens, manifesting itself in alcoholics with pneumonia, or after operations or injuries, and is the forerunner of death in some operative cases.

DELIRIUM TREMENS. See **DELIRIUM**.
DELISLE, de M^r. See **LISIE**, **GUILAUME DE**.
DELISLE, Léopold Victor (1826-1910). A French historian and bibliographer, born at Valognes. For many years he was connected with the Bibliothèque Nationale. In 1871 he was made director of the department of manuscripts and in 1874 general director of the great library. His works include: *Rouleau des morts du XI^{ème} au XVI^{ème} siècle* (1866); *Le cabinet des manuscrits de la Bibliothèque Nationale* (3 vols., 1868-81); *Inventaire général et méthodique des manuscrits français* (2 vols., 1876-78); *Les Bibles de Gutenberg* (1894); *Catalogue des livres imprimés ou publiés à Caen avant le milieu du XVI^{ème} siècle* (2 vols., 1903-04); *Les heures de Blanche de France* (1905); *Recherches sur la librairie de Charles V* (1907); *Les heures dites de Jean Pucelle* (1910); *Instructions élémentaires et techniques pour la mise et le maintien en ordre des livres d'une bibliothèque* (4th ed., 1910). For a fuller list of his early works, consult Oursel, *Nouvelle biographie normande* (Paris, 1885).

DELITZSCH, dā'lich. A town and important railway junction of the Prussian Province of Saxony, 15 miles north of Leipzig on the right bank of the Lohr (Map: German Empire, E 3). It is an old but well-built town, still partially surrounded by walls. The castle of the fourteenth century, rebuilt in 1690, is now used as a female penitentiary. The manufactures include cigars, beer, cereals, sugar, sirup, shoes, and hosiery. In the neighborhood are rich coal mines. The town is the birthplace of the famous naturalist Christian Gottfried Ehrenberg and the economist Schulze-Delitzsch. Pop., 1900, 10,500; 1905, 10,940; 1910, 13,031. Delitzsch was incorporated with Prussia in 1815. Consult Lehman, *Chronik der Stadt Delitzsch* (Delitzsch, 1852).

DELITZSCH. See **SCHULZE-DELITZSCH**.
DELITZSCH, FRANZ (1813-90). A German Lutheran theologian, born and educated in Leip-

zig. He became professor of theology at Rostock in 1846, at Erlangen in 1850, and at Leipzig in 1867. He was one of the strongest exponents of what is called the Erlangen school, or the strictest orthodox theology. He interested himself in the conversion of the Jews—he was of Hebrew descent—and for this purpose used his great knowledge of Hebrew and the Talmud and founded a training school (1886), now called the Institutum Delitzschianum. His translation of the New Testament into Hebrew (1877) was widely circulated in Galatia and Russia. His earlier works were intensely conservative and strictly Lutheran, but later he approached the position of the radical higher critics. He aided Baer in editing the Massoretic text of the Old Testament (1869-95). Besides commentaries on *Habakkuk* (1843), *Genesis* (1852; 1887; English, 1888), *Psalms* (1859-60; English, 1873), *Job* (1864; English, 1866), *Isaiah* (English, 1875), *Proverbs* (1873; English, 1874-75), *The Epistle to the Hebrews* (1857; English, 1865), *Song of Songs and Ecclesiastes* (English, 1877)—the English versions being in "Clark's Foreign Theological Library"—and other theological works, he published some popular devotional writings, among which the following had a wide circulation: *Das Sakrament des wahren Leibes und Blutes Jesu Christi* (1844); *Vier Bücher von der Kirche* (1847); *Philemon, oder von der christlichen Freundschaft* (2d ed., 1858); *Handwerkerleben zur Zeit Jesu* (1868; Eng. trans., 1877; 1902); *Ein Tag in Kapernaum* (1871); *Durch Krankheit zur Genesung* (1873). Consult Curtiss, *F. Delitzsch* (London, 1891).

DELITZSCH, FRIEDRICH (1850-). A German Assyriologist, a son of Franz Delitzsch. He was appointed extraordinary professor at Leipzig in 1877, ordinary professor at Breslau in 1893, and in 1899 professor of Assyriology in the University of Berlin. His lectures attained a wide popularity, and one of them, entitled *Der babylonische Ursprung hebraischer Ideen*, delivered in 1901, was attended by Emperor William II, who also gave a large sum towards the researches to be made in the territory of ancient Babylonia. In 1906 he lectured in the United States. He wrote: *Assyrische Lesestücke* (4th ed., 1900); *Wo lag das Paradies?* (1881); *Studien über indogermanische Wurzelverwandtschaft* (2d ed., 1884); *Assyrisches Wörterbuch zur gesamten bisher veröffentlichten Keilschriftliteratur* (1887 et seq.); *Assyrische Grammatik* (1889); *Assyrisches Handwörterbuch* (4 vols., 1894-96); *Das babylonische Welterschöpfungsepos* (1896); *Babel und Bibel* (1902; Eng. trans., 1903); *Assyrien und die Assyrische Kultur seiner Zeit* (1909); *Handel und Wandel in Altbabylonien* (1910); numerous articles in *Mitteilungen der Deutschen Orient-Gesellschaft* (1890-1913); *Kleine sumerische Sprachlehre* (1914); *Sumerisches Glossar* (1914).

DELIUS (Lat., from Gk. Δῆλιος, *Dēlios*). A name given to Apollo, who was fabled to have been born on the island of Delos.

DELIUS, FREDERICK (1863-). An English composer. He was born in Bradford, Yorkshire, of German parents. In 1883 he went to Florida as manager of an orange plantation, and there he began the study of composition by himself. From 1886 to 1888 he studied at the Leipzig Conservatory under Reinecke and Jadassohn. In 1890 he took up his residence in

Paris. His compositions show decided talent and originality and have been received with marked favor. His works include the operas *Koanga* (1904), *Romeo and Juliet in the Village* (1907), *Margot la Rouge* and *Fennimore* (1914); for orchestra, an overture *Over the Hills, a Norwegian Suite*, *Paris, Lebenstanz*, a *Legend* for violin and orchestra, a piano concerto in C m.; and the choral works with orchestra *Appalachia*, *Sea-Drift*, *A Mass of Life*. Consult M. Chop, "Frederick Delius" in vol. ii, *Monographien Moderner Musiker* (Leipzig, 1907).

DELIUS, Δῆλιος, NIKOLAUS (1813-88). A German philologist and Shakespearean scholar, born in Bremen. He studied at the universities of Bonn and Berlin, visited England and France, and settled in 1841 in Berlin. In 1846 he removed to Bonn, where he was professor from 1855 to 1880. Among his writings those concerned with the criticism and interpretation of Shakespeare's works are the most important, above all, the great edition of the complete works, with a critical preface and explanatory notes, published 1854-61, and repeatedly thereafter. Besides this must be mentioned *Die Tiecksche Shakespeare-Kritik* (1846); *Der Mythos von William Shakespeare* (1851); *Ueber das englische Theaterwesen zu Shakespeares Zeit* (1853); *Shakespeare-Lexikon* (1851); *Pseudo-Shakespearsche Dramen* (1856-74).

DELIVERY (OF. *delivrer*, Lat. *deliberare*, to free, from *de* + *liber*, free). The physical transfer of possession. The term is commonly employed in the law to characterize such an act when performed with the purpose of creating or transferring a legal right. Its significance springs from the importance of physical possession as an element of ownership. In primitive society it is the principal, and in its earlier stages the controlling, element in the conception of property. The metaphysical notion of ownership, dis severed from possession and even from the right of possession, belongs to a comparatively advanced stage in the evolution of legal ideas. At first possession, if not theoretically identical with ownership, is at least attended with its legal effects and always tends in practice to supersede the more abstract right, a fact which finds expression in the maxims *boni possidentes*, "Possession is nine points of the law," etc. Under such a conception of ownership there is only one way in which the title to property can be transferred, and that is by the actual transfer of the physical control over the property, and hence delivery of possession becomes the important fact in the assignment of legal rights over physical objects.

It is easy to see how this simple process, so convenient and appropriate in the case of chattels, came to be transferred to the conveyance of interests in lands. There was no way in which these interests, however temporary and limited in character, could be vested in another but by putting him into possession of the land itself, and thus we find the early method of conveying to be the transfer of the land by delivery. See **FEOFFMENT**; **LIVERY OF SEISIN**; **SEISIN**.

Though this method of conveying real property has been superseded on both sides of the Atlantic by more convenient methods, the notion of the significance of delivery has been transferred to the written instrument by which lands

are now universally conveyed, and has even been extended to other transactions in which similar instruments are employed; while in the case of chattels delivery of possession is still the usual, and in many cases the essential, mode of transfer. See **DEED**; **GIFT**; **SALE**.

While delivery usually contemplates the actual handing over of the subject matter of the transaction by the transferor, or party to be bound, to the transferee, or party to be benefited, it may equally be effected by any appropriate and manifest act whereby the deliverer is put in the same position of control over the thing as that which the deliveror held prior to the act. The possession thus assumed may be immediate and personal or it may be by an agent or servant. The transfer of title to a house may, if so intended, carry with it the possession of the chattels therein, and the actual physical delivery of a key may constitute a delivery of securities in a strong box or of a horse in a stable. So there may be a symbolical delivery, as of goods, by the transfer of the bill of lading or warehouse receipt describing them, or of money on deposit in a savings bank, by passing over the bank book. There is also what is called a "constructive" delivery, as where a part of a bill of goods is delivered for the whole, or where, a thing having been placed by the owner in the custody of a third person, the custodian agrees to hold it for the deliverer.

It will be noticed, however, that in no case is there a legal delivery by mere words indicating an intention to transfer the title, without some overt and significant act on the part of the donor or vendor, whereby he surrenders his control over the article. The nearest approach to such a case is that referred to in the article on **DEED**, where such a declaration of intention accompanies and explains an equivocal act, such as the laying down of an instrument on the desk of the deliveror or his inclosing it in an envelope addressed to the deliverer. See **POSSESSION**.

Consult Pollock and Wright, *An Essay on Possession in the Common Law* (Oxford, 1888), and the authorities referred to under such titles as **SALE**; **POSSESSION**; **TITLE**; etc.

DELIVERY. See **OBSTETRICS**.

DELLA CRUSCAN SCHOOL. About the year 1785 a number of English residents in Florence sought to beguile their leisure hours by writing verses, which they published under the title of *The Florence Miscellany*. The insipidity, affectation, and fantastic silliness of these productions transcended belief; yet, such was the poetic destitution of the period that they soon found admirers and imitators. Taking the name of an academy in Florence (see **ACADEMY**), the Della Cruscans presently began to print their lucubrations in England, chiefly in two daily newspapers called the *World* and the *Oracle*. "While the epidemic malady was spreading from fool to fool," says Gifford puntingly, "one of the brotherhood, a Mr. Robert Merry, came over from Florence and immediately announced himself by a sonnet to Love." It was answered by a certain Anna Matilda, who (as was the custom) praised it immoderately in language even more absurd than Merry's own. "The fever now turned to a frenzy," Gifford continues; Laura, Maria, Carlos, Orlando, Adelaide, and a thousand other nameless names caught the infection; and from one end of the kingdom

to the other all was nonsense and Della Crusca." Retribution came, however, for in 1794 Gifford produced his *Baviad* and in 1796 his *Morviad*. Rarely has literature witnessed such an exorciation. It quickly and completely killed the "school," and, indeed, it is only in these two poems that the memory of most of the unhappy Della Cruscan songsters has been preserved at all.

DELLA ROBBIA. See **ROBBIA**.

DELLENBAUGH, del'en-bə, **FREDERICK SAMUEL** (1853-). An American explorer, born at McConnelsville, Ohio. He was educated in Buffalo, New York City, Munich, and Paris. In 1871-73 he was artist and assistant topographer with Major Powell's second expedition down the Colorado River, and in 1899 he was a member of the Harriman expedition to Alaska and Siberia. He served as librarian of the American Geographical Society from 1909 to 1911 and became a fellow of the American Ethnological Society. Besides contributions to Sturgis's *Dictionary of Architecture*, to the second edition (1914-15) of the *NEW INTERNATIONAL ENCYCLOPEDIA*, and to magazines, his writings include: *The North Americans of Yesterday* (1900); *The Romance of the Colorado River* (1902; 3d ed., 1909); *Breaking the Wilderness* (1905); *A Canyon Voyage* (1908); *Frémont and '49* (1913; 2d ed., 1914).

DELLYS, del-léz' (Kabyle *Teddes*, Lat. *Ruscurrus*). A seaport town and important military post of Algeria, situated 40 miles east of Algiers, with which it is connected by rail. It is divided into a European and a native port and has a good roadstead. It contains a mosque and an industrial school and carries on a considerable trade in grain, olives, and wine. Pop. (commune), 1901, 13,977; 1911, 13,026, including 960 French residents. The city has been successively Roman, Arab, Spanish, and Turkish, and is now under French control.

DEL MAR, ALEXANDER (1836-). An American economist, born in New York City and educated at New York University. He founded the *Social Science Review* and was its editor in 1864 to 1866, and in the latter year organized and was director of the United States Bureau of Statistics. In 1876 he was appointed mining commissioner of the United States Monetary Commission. His publications comprise: *The National Banking System* (1865); *The History of Precious Metals* (1880); *The History of Money in Ancient Countries* (1884); *The Science of Money* (1885); *Money and Civilization* (1886); *The History of Money in America* (1899); *Ancient Britain* (1900); *Worship of Augustus Caesar* (1900); *Middle Ages Revisited* (1900); *History of Money in the Netherlands* (1903); *Messiah, a History of the Colonization of Asia Minor, Egypt, and Europe from the Orient* (1907).

DELMENHORST. A town in the Grand Duchy of Oldenburg, on the Delme, 10 miles southwest of Bremen (Map: Germany, C 2). Wool carding, yarn spinning, jute spinning, and the manufacture of cigars, ironware, linoleum, bricks, and lumber constitute the principal industries. There are also important cattle and horse markets. Pop., 1890, 6828; 1900, 16,573; 1910, 22,516.

DELMONTE Y TEJADA, dél-món'tá & tá-há'dá, **ANTONIO** (1783-1861). A Spanish-American historian, juriconsult, and statesman. He was born at Santiago de los Caballeros (Santo

Domingo) and studied law at the University of Santo Domingo. He participated in the campaign against Toussaint l'Ouverture, but in 1804 was compelled to seek refuge in Cuba and ultimately settled at Havana as an official of the government. He wrote a *Historia de Santo Domingo desde su descubrimiento hasta nuestros dias* (Havana, 1853). The first volume was all he succeeded in publishing, but he left two more completed, and notes to bring the account down to his time.

DE LOACH, ROBERT JOHN HENDERSON (1873-). An American botanist, born at Statesboro, Ga., and a graduate of the University of Georgia (class of 1898). He was superintendent of Swainsboro (Ga.) schools (1900), teacher in the United States Indian School at Fort Sill, Okla. (1900-02), and principal of the Statesboro high school (1903-05). After serving as botanist at the Georgia Experiment Station (1906-08), he became professor of the cotton industry at the State College of Agriculture (Georgia) in 1908. In the summer of 1911 he was collaborator at the Bureau of Plant Industry. Besides bulletins on plant diseases and breeding, and magazine articles, he is author of *Rambles with John Burroughs* (1912).

DELOCHE, de-lôsh', JULES EDOUARD MAXIM (1817-1900). A French historian and archaeologist. He was born at Tulle and, after having studied law at Bordeaux, entered the government service in 1840, and held various offices in the Ministry of Public Works. In recognition of his works in the field of history, archaeology, and numismatics, he was elected a member of the Academy of Inscriptions in 1871. He died in Paris. Among his publications are: *Etienne Baluze, sa vie et ses œuvres* (1858); *Cartulaires de l'abbaye de Beaulieu* (1859); *Etudes sur la géographie historique de la Gaule, etc.* (1861-64); *La Trustis et l'antrusion royal sous les deux premières races* (1873); *Des monnaies d'or au nom du roi Théodébert* (1886-88); *Etudes de numismatique mérovingienne* (1890). *Les Archiprêtres de l'ancien diocèse de Limoges, etc.* (1899).

DELOLME, de-lôlm', JEAN LOUIS (1740-1806). A Swiss jurist, born in Geneva, where he practiced law. Having given offense to the authorities by his publication, *Examen des trois points des droits*, he was obliged to take refuge in England, where, in spite of his literary activity, he lived for several years in great poverty. He returned to his native country in 1776. His principal work is *Constitution de l'Angleterre* (1771), which was translated into English by himself and passed through several editions. He also published, in English, *Parallel between the English Government and the Former Government of Sweden* (1772); *History of the Flagellants* (1777). *Essay Containing Strictures on the Union of Scotland with England* (1787).

DE LONG, GEORGE WASHINGTON (1844-81). An American naval officer and Arctic explorer. He was born in New York City, graduated at the United States Naval Academy in 1865, and by 1873 had risen to be navigating officer of the *Uniate*, in which search was being made for the lost *Polaris*, the Arctic exploring steamer in which Captain Hall had sailed. To his enthusiasm for polar research thus kindled was due the *Jeannette* expedition, subsidized by James Gordon Bennett, which set out from San Francisco in 1879 with a company of 33, com-

manded by Lieutenant Commander De Long. The *Jeannette* was crushed in the ice north of Siberia, and the party, after traversing the ice on sledges, set out for the land in three boats, of which one was lost at sea. The one containing De Long reached the Lena River; but (except two seamen, who succeeded in reaching a settlement) her crew, including De Long, died of starvation in Siberia. The third, which contained George W. Melville and Lieutenant Danenhower (qq.v.), arrived at the Lena in October, 1881, and after months of search found the bodies of De Long and his companions (March, 1882), which were brought to New York and buried with honor. Consult: De Long, *The Voyage of the Jeannette*, comprising his journals, edited by his widow, Mrs. Emma J. (Wotton) De Long (1883); Danenhower, *The Narrative of the Jeannette* (Boston, 1882); Melville, *In the Lena Delta* (ib., 1885). See POLAR RESEARCH.

DELOO', See DUiker.

DELOD, de-lôr', TAXILE (1815-77). A French publicist, born at Avignon. He began his career as a journalist in Marseilles and in 1837 settled in Paris, where he became a contributor to several journals, notably the *Charivari*, of which he was editor in chief from 1848 to 1858. Afterward he was connected with the *Siccle* as literary editor. Elected to the National Assembly (1871-76), he voted steadily with the extreme Radical party. He published *Physiologie de la Parisienne* (1841); *Les Matinées littéraires* (1860). *Histoire du second Empire* (1868-75), his principal work.

DELOORME, de-lôrm', MARION (1611-50). A notorious French courtesan. At an early period of her life she went to Paris, where her great beauty would easily have secured for her a good match had she not been inclined to a life of licentious intrigue. Almost all the distinguished men of the age were her lovers, among them Cinq-Mars, the great Condé, his brother the Prince de Conti, the Duke of Buckingham, and Cardinal Richelieu. During the first disturbances of the Frondeurs her house was the rallying point of the chiefs of that party, and, in consequence, Mazarin was about to imprison her, when she suddenly died in 1650. A curious tradition sprang up in France during the next century, to the effect that Marion had not died, but had escaped to London, that she had returned to Paris in 1682; that she meanwhile had been twice married, and, finally, that she died in 1706 or, according to others, even as late as 1741. Victor Hugo has made her the subject of a drama, and Alfred de Vigny described her fate in his novel *Cinq-Mars*. Consult J. Peladan, *Histoire et légende de Marion Delorme* (Paris, 1882).

DE L'ORME, PHILIBERT (c.1515-70). The earliest of French Renaissance architects in the modern sense; the first, i.e., who practiced architecture as a profession after a special training for it. He belonged to a family of architects and went to Rome in 1534 to study the ancient monuments. After a number of years spent on the works of the palace at Fontainebleau he was appointed architect to the King in 1546. He built the great hall on the bridge at the Château de Chenonceaux, for which he planned a vast extension, which was never carried out. His chef-d'œuvre is the Château d'Anet (1552-59), which he built for Diana of Poitiers, a fine design displaying the new classical tendency

which he acquired in Rome, though still far from the rigidity of the Palladian type. After a period of disgrace Catharine de' Medici employed him to design the palace of the Tuileries (1563), the construction of which he continued until his death. This was a vast project, of which but a small fragment was built, and this by no means worthy of De l'Orme's talent. The lower story was adorned with banded Ionic columns, which De l'Orme's vanity claimed as a new or "French" order. (See TUILERIES.) De l'Orme—or Delorme, as his name is also written—was the author of the earliest French treatise on architecture, *Nouvelles inventions pour bien bastir et à petits frais* (Paris, 1561). Consult: Pattison, *The Renaissance of Art in France*, vol. i (London, 1879); Palustre, *La renaissance en France*, vols. i, ii (Paris, 1879-81); Vachon, *Philibert de l'Orme* (ib., 1887).

DELOIRME, PIERRE CLAUDE FRANÇOIS (1783-1859). A French historical painter and lithographer, born in Paris. He was a pupil of Girodet, whose manner he imitated. His art embodies the classical tendencies of the school of David (q.v.). His most important canvases are: "The Death of Abel" (1810), in the Montpellier Museum; "Héro and Leander" (1814); "Raising of the Daughter of Jairus" (1817), in the church of Saint-Roch, Paris; "Descent of Christ into Limbo" (1819), in Notre Dame de Paris; "Cephalus Carried off by Aurora" (1822), in the Museum of Cens, "Foundation of the Collège Royal by Francis I," Versailles Gallery. He also executed mural paintings in the churches of Saint-Eustache, Saint-Gervais, and Notre Dame de Lorette, in Paris.

DELOS (Gk. Δῆλος). The smallest but most famous of the Cyclades, called in ancient times Asteria, Ortygia, and Cynthus (Map Greece, G 4). It is situated between the islands Rhenea and Myconos. It is about 3½ miles from north to south, and ¾ of a mile from east to west. Near the centre rises the rocky hill Cynthus, about 380 feet high, to the west and north of this hill is almost the only level ground of the island, and here were situated the sanctuary of Apollo and the ancient town. According to the myth, Delos was at first a floating island, but was fastened by chains to the bottom of the sea, or to Myconos and Gyraos by Poseidon or by Zeus, that it might afford a refuge from the jealous Hera for Leto, who there brought forth Apollo and Artemis. Vergil (*Æneid*, iii, 75-77) makes Apollo bind Delos to Myconos, in gratitude for his birth on Delos. From very early times Delos was a sacred island, the centre of the Ionian cult of Apollo, and the scene of a great festival, the Delia, celebrated by the Ionians in the month Thargelion (May-June), and mentioned in the Homeric Hymn to Apollo. Even the Persian general Datis (q.v.), when on his way to attack Athens, spared this island and made a rich offering to the god. After the Persian wars Delos became the centre and treasury of the new league under the presidency of Athens, and when the league was transformed into the Athenian Empire the temples of Delos seem to have passed under Athenian control. See **ATHENS, History**; **GREECE, History** (Ancient History). In 426 B.C. the island was purified by the Athenians, who removed all the dead bodies to the neighboring island of Rhenea and ordered that hereafter no birth or death should occur on this sacred spot. In 422 B.C. they even expelled all the secular inhabitants, but

allowed them to return in the following year. After the fall of Athens, in 404 B.C., Delos seems, thanks to the Spartans, to have regained its independence for a time; but the Athenians soon recovered the suzerainty and seem to have retained it until about 322 B.C., when Delos became a free community, a position which it maintained until about 166 B.C. During this period the island prospered greatly. The successors of Alexander vied with one another in gifts to Apollo, while its central position made Delos a natural centre of commerce. Nor did this prosperity decrease when the Romans once more placed Delos under Athenian rule (166 B.C.), for at the same time all imports and exports were freed from taxation, and during the second and first centuries B.C. Delos was the seat of a large colony of merchants, Italian, Greek, and Eastern. It was a centre of the slave trade, but had few local industries, except the manufacture of a variety of bronze. Sacked during the Mithridatic wars (c.87 B.C.), it never fully recovered, and by the middle of the second century A.D. was deserted by all except those connected with the temple. With the fall of heathendom the island was deserted except by those who visited it to collect building material or to burn its marbles into lime. Today the island is deserted, except by the few shepherds who in the summer cross with their flocks from Myconos or Rhenea.

During the fifteenth and sixteenth centuries the island was plundered for the benefit of European collections, but scientific exploration began only in 1829 with the French scientific expedition under the direction of Blouet. In 1873 Lebeque explored the ancient shrine and grotto on Mount Cynthus, and in 1877 Homolle began excavations in the sanctuary of Apollo. Since then the French School at Athens has conducted numerous and successful campaigns, which have brought to light not only the sacred precinct with its temples, porticos, and altars, but also the wharves and warehouses, the bazars of the merchants, the theatre, the gymnasium, and a number of private houses, belonging apparently to the prosperous period of the second century B.C. In sculpture the island has yielded some important archaic statues of the sixth century B.C., such as the "Nike" of Archermos, the statue dedicated by Nicandra, and some female figures similar to those found on the Acropolis of Athens, and, of later art, a fighting warrior and a fine copy of the "Diadumenos" of Polyclitus (q.v.), as well as many other works, often, unfortunately, in very poor preservation. The chief harvest has been in the inscriptions, many of which are still unpublished. In addition to the decrees and dedications always common in sanctuaries, these include long lists of the treasures of the temple and also an important series of accounts, showing the receipts and expenditures of the temple, carefully itemized, and throwing a flood of light on the financial administration of a Greek shrine. Consult: Lebeque, *Recherches sur Delos* (Paris, 1876); Von Schoeffer, *De Delis Insulae Rebus* (Berlin, 1889); Homolle, *De Antiquissimis Dianæ Simulacris* (Paris, 1885) and *Les archives de l'intendance sacrée de Delos* (ib., 1886)—this work gives a plan of the excavations; *Bulletin de correspondance hellénique*, vol. i et seq. (ib., 1877 et seq.); Frank, "Commercialism and Roman Territorial Expansion," in the *Classical Journal*, vol. v, pp. 99-110 (1909); this article

throws much light on the relation of the Romans to Delos. Good summaries of the history and antiquities are to be found in Jebb, *Journal of Hellenic Studies*, i (London, 1881); Diehl, *Excursions in Greece*, Eng. trans. by Perkins (New York, 1893); *Guide Joanne, Grèce*, vol. ii. Consult also: Schoeffer, in Pauly-Wissowa, *Realencyclopädie der klassischen Altertumswissenschaft*, vol. iv (Stuttgart, 1901); Homolle and Holleaux, *Exploration archéologique de Delos* (parts i-iii, Paris, 1910-11); Larfeld, *Griechische Epigraphik* (Munich, 1913); Ferguson, *Hellenistic Athens* (New York, 1911). For the theatre, consult Haigh, *The Attic Theatre* (3d ed., Oxford, 1907); for works of art found at Delos, consult Gardner, *A Handbook of Greek Sculpture* (London, 1911) and *Principles of Greek Art* (ib., 1913). Consult, finally, Baedeker, *Greece*, 4th Eng. ed. (Leipzig, 1909).

DELOS, CONFEDERACY OF. See **DELOS**: **GREECE**, *History* (Ancient History).

DELPHI, δελφί (Gk. Δελφοί, *Delphoi*). An ancient town of Phocis, Greece, celebrated for its oracle of Apollo (q.v.). It was situated 2130 feet above sea level, about 6 miles inland, north of an indentation in the northern shore of the Corinthian Gulf (Map: Greece, Ancient, C 2). In the Homeric poems it is always called Pytho. It was situated on the southern slope of Mount Parnassus (q.v.), where above the steep and narrow valley of the Pleistos rise the twin cliffs of the Phædriade, the 'Shining Rocks.' These precipices are separated only by a narrow chasm, from which issues the famous fountain of Castalia (q.v.). The temple, theatre, and stadium were situated at the foot of the western cliff, and about them the town must have gathered, though the gymnasium and a sanctuary of Athena lay to the east. Below the terrace on which the town lay, the land slopes abruptly to the bed of the Pleistos. The natural surroundings are full of wild grandeur; from underground caverns streamed cold vapors, and the region was liable to violent shocks from earthquakes.

The place seems early to have become the seat of a worship of the earth shaker, Poseidon, and the earth mother, Gæa. Somewhat later, but still at a very early date, the worship of Apollo was introduced and took the place of these cults. Since Apollo was a prophetic god, Delphi became the seat of an oracle, which soon attained great fame. At first the responses seem to have been given from the rustlings of the laurel, as at Dodona (q.v.) from the oak. Later, the Pythia—at first a maiden, subsequently a woman over 50 years old, garbed as a maiden—after drinking from the holy spring and chewing laurel leaves, took her seat upon a tripod in the *adyton*, or inner shrine. Her utterances were taken down and put into hexameters by poets attached to the temple. During the greatest prosperity of the oracle three women relieved one another in this exhausting task. At the head of the temple service stood two priests, holding office for life and seemingly in charge of the oracle. The oracle was consulted by states and kings in matters of national policy, and also by private persons on all manner of personal matters, such as voyages, business ventures, marriages, and other details of daily life. Its fame brought it great wealth and many splendid offerings, among which those of Cæsus and Gelon of Syracuse were especially famous. In the earliest source, the Homeric hymn to Apollo, Delphi appears in dependence upon the

Phocian city of Crisa, near the Corinthian Gulf, which controlled access from the sea, and through the later political history of the place this early claim of the Phocians to the control of the oracle keeps recurring until the conquest of Philip of Macedon. The acts of Crisa led to the first of the Sacred Wars (q.v.), in which the Amphictyonic Council (q.v.) of Thermopylæ first appears as a guardian of the oracle. In 590-589 B.C. Crisa fell, and the first celebration of the Pythian games occurred; in 582-581 B.C. the fort was captured, the harbor filled up, and the whole plain placed under a curse. On this occasion another celebration of the games occurred, and from this time they were celebrated every four years. In 548 B.C. the stone temple, said to have been built by Trophonius and Agamedes, was burned, and the priests at once collected subscriptions from all Greece, and even from foreign parts, for its reconstruction. The work of reconstruction was undertaken by the Alcmaeonidæ (q.v.), then exiles from Athens, who did more than they were required to do, by employing Parian marble for the east front instead of the *poros*, or limestone, specified in the contract. Some fragments of sculpture found by the French seem to belong to this building. During the Persian wars the oracle showed a pro-Persian spirit, though later the priests declared that supernatural aid had turned to flight a Persian plundering expedition (480 B.C.). In spite of its prophecies of defeat Delphi was richly rewarded by the Greeks from the Persian booty. During the fifth century Delphi was adorned by the Greek states with treasures to contain their offerings, as well as with many works of art commemorative of victories over their enemies. About 373 B.C. the temple suffered severely, and once more collections were invited from the Greek states for its restoration, which does not seem to have been completed till 328 B.C. Before that time, however, an attempt of the Phocians to reassert their control of the oracle led to the third Sacred War (357-346 B.C.), which ended in the triumph of Philip II of Macedon (q.v.). About 300 B.C. Delphi passed into the power of the Ætolian League, and when (278 B.C.) the Gallic invasion was repelled (see **BRENNUS**, 2), we hear once more of the supernatural powers that drove back the robbers from the temple of Apollo.

During the years that followed Delphi seems to have lost much of its old importance, though the inscriptions show that offerings were still made there, and honors were bestowed on benefactors of the community. Under the Romans it enjoyed only spasmodic prosperity: one Pythia sufficed for the inquirers of the oracle. Though some of the emperors endeavored to restore some of the fallen splendor, others found in the mass of statues and works of art a convenient source for the decoration of Rome. Nero is said to have carried off 500 statues, while Constantine, along with many other treasures, removed to Constantinople the serpent column which had formed part of the offering after the victory at Platea (q.v.), and still bears the names of those Greek states which fought against the Persians (it stands now in the Hippodrome at Constantinople). Later Delphi became the site of a Christian church, but the ruins finally vanished, and until 1892 the site was occupied by the village of Castri (q.v.). In 1880-82 Haussoullier, and, in 1887, Pomtow had conducted excavations at Delphi. In 1892

the French School at Athens, under the direction of Homolle, began excavations, which have resulted in laying bare the entire sacred precinct, including many treasuries and other buildings, as well as the altar, temple, theatre, and stadium; the theatre and the stadium in particular are well preserved. The inscriptions found number over 4150, many of them documents of great importance for the history of Greece, especially for the history of the Delphic Amphictyony. The sculpture also has thrown much light upon the history of art during the later sixth and early fifth century B.C., while it seems almost certain that in a marble statue we have a contemporary copy of a bronze by the great Lysippus. Consult E. A. Gardner, *Six Greek Sculptors*, pp. 217-223 (London, 1910). Another wonderful work of art from Delphi is the "Bronze Charioteer" figured and described by Gardner in the work just named (pp. 49-53). The reports of these excavations are to be found in the *Bulletin de correspondance hellénique*, vols. xvii et seq. (Paris, 1893 et seq.; for plans, see vols. xvi, xvii), and the *Comptes rendus de l'Académie des Inscriptions et Belles Lettres* (ib., 1893 et seq.). Consult also: Mommsen, *Delphika* (Leipzig, 1878); Pomtow, *Beiträge zur Topographie von Delphi* (Berlin, 1889); Hiller von Gaertringen and Pomtow, in Pauly-Wissowa, *Realencyclopädie der klassischen Altertumswissenschaft*, vol. iv (Stuttgart, 1901). Frazer, *Pausanias*, vol. v (2d ed., London, 1913); Baedeker, *Greece* (4th Eng. ed., Leipzig, 1909); Larfeld, *Griechische Epigraphik* (Munich, 1913).

DELPHI. A city and the county seat of Carroll Co., Ind., 60 miles north by west of Indianapolis, on the Wabash River, and on the Wabash, and the Chicago, Indianapolis and Louisville railroads (Map: Indiana, C 2). It has good water power and contains lime works, planing and flour mills, canning factory, carriage and wagon works, paper mills, button factory, stone crushers, etc. There are municipal water works and a public library. Pop., 1890, 1923, 1900, 2135, 1910, 2161.

DELPHIN CLASSICS (Lat. *delphinus*, dolphin, from Gk. δελφίς, *delphis*, δελφίρ, *delphin*, dolphin). A famous edition of the Latin classics, published in France in the seventeenth century. It was prepared by 39 of the best scholars of the time, under the editorship of Pierre Daniel Huet (q.v.), tutor to the Dauphin (q.v.), son of Louis XIV. The title-pages bear the words *In usum Reuerendissimi Delphini*, hence the name: all the volumes of the original edition have an engraving of Arion (q.v.) and the dolphin. The Delphin Classics comprise 64 volumes (1674-1730). They possess little value now. Consult Sandys, *A History of Classical Scholarship*, vol. ii (Cambridge, 1908).

DELPHINIA. See GREEK FESTIVALS.

DELPHINTUM. See LARKSPUR.

DELPHOS. A city and railroad centre in Allen and Van Wert counties, Ohio, 15 miles northwest of Lima, on the Miami and Erie Canal, and on the Pennsylvania Company, the Toledo, St. Louis, and Western, the Northern Ohio, the Ohio Electric, and the Cincinnati, Hamilton, and Dayton railroads (Map: Ohio, B 4). It has railroad repair shops, marble and granite works, paper and flour mills, brewery, and manufactories of galvanized iron products, oil cans, printing presses, furniture, pipe, etc. Settled in 1834, Delphos was incorporated in

1851 as a village and became a city in 1913. Its government is administered by a mayor, elected every two years, and a municipal council. The city owns and operates its water works and contains a Carnegie library. Pop., 1900, 4517; 1910, 5038.

DELPINO, dal-pe'no, FEDERICO (1833-1905). An Italian botanist, born at Chiavari (Genoa). He studied at the University of Genoa, became an official in the customs department, and in 1871 was appointed professor of natural history in the School of Forestry at Vallombrosa. In 1875 he was called to the chair of botany at the University of Genoa and in 1894 to a similar chair and the curatorship of the botanical gardens at the University of Naples. His publications, which have contributed much to the study of plant biology, include *Sulla darwiniana teoria della pangenesi* (1869); *Teoria generale della filotassi* (1883); *Funzione mirmeofila nel regno vegetale* (2 parts, 1886-88); *Fiore doppi* (1887).

DELPIT, del-pe', ALBERT (1849-93). A French novelist and dramatist. He was born in New Orleans, the son of a wealthy tobacco merchant, and at an early age was sent to France to complete his studies. Devoting himself to literature, he first became a contributor to newspapers founded by the elder Dumas towards the end of the Second Empire. Several poetic productions were honored with prizes by the Academy. These were *L'Apothéose de Lamartine* (1869); *L'Invasion* (1871), a volume of verse; and *Le repentir, ou récit d'un curé de campagne* (1878). His earlier dramatic efforts did not meet with success, but *Le fils de Coralie* (1879), dramatized from his novel of the same title, was received with great favor, and several of his subsequent dramatizations held the stage for some time, especially *Le père de Martial* (1881). He was, however, at his best as a novelist. Among his productions in this field, for the most part descriptive of life in fashionable society, and many of which appeared first in the *Revue des Deux Mondes*, are: *La vengeresse* (1874); *Les fils de joie* (1877); *Le mariage d'Odette* (1880); *La marquise* (1882); *Les amours cruelles* (1884); *Solange de Croix-Saint-Luc* (1885); *Made-moiselle de Bressier* (1886); *Thérèseine* (1888); *Disparu* (1888); *Comme dans la vie* (1890); *Belle madame* (1892). A collection of poems appeared under the title *Les dieux qu'on brise* (1881). During the Franco-German War he entered the army, and, serving with distinction, was decorated with the Legion of Honor (1871). He died in Paris.

DELPIT, EDOUARD (1844-1900). A French author and journalist, born in New Orleans, U. S. A. He studied in France, where he was naturalized in 1868, and in 1873 became sub-prefect of Nérac. Subsequently he assumed control of the *Union Nationale*, a newspaper of Montpellier. He published a volume of poems, *Les mosaïques* (1871), and *Paule de Brüssange* (1887), *La vengeance de Pierre* (1888), *Chaine brisée* (1890), *Marcelle* (1894), *Sans merci* (1898), *La talion* (1899) — all works of fiction.

DEL POLLAJUOLO, del pól'la-hwól'o, SIMONE. See POLLAJUOLO.

DEL RIO, del ré'o (Sp., of the river). A city and the county seat of Val Verde Co., Tex., 170 miles west of San Antonio, on the Galveston, Harrisburg, and San Antonio Railroad (Map: Texas, B 5). Notable features of the city are the San Felipe springs, a hospital, two

convents, and the Federal building. It has cotton gins and other industrial establishments, and is the centre of a truck-farming and cattle-raising region. Pecans, wool, hides, live stock, fruit, and vegetables constitute important exports. Del Rio has adopted the commission form of government. Pop., 1914 (local est.), 9000.

DELSARTE, *del-sart'*, FRANÇOIS ALEXANDRE NICOLAS CHÉRI (1811-71). A French-American musician, born in Solesmes, France. He was a pupil of the Conservatoire, was for a time a tenor singer in the Opéra Comique, composed a few melodies, and wrote several romances, but is chiefly known as a teacher in singing and declamation. He sought by an elaborate system to present the art of expression as a complete science. His theories have been widely adopted, and are handed down mainly by tradition, as DELSARTE wrote very little about them.

DELSARTE SYSTEM. See GYMNASICS.

DELTA (Lat., from Gk. *δέλτα*, fourth letter of the alphabet, anything shaped like the letter Δ, from Heb. *daleth*, door, name of the fourth letter of the alphabet). An alluvial plain occurring at the mouth of a river. The name was applied originally by the Greeks to the land area at the mouth of the Nile, from the resemblance in shape to their letter Δ. All rivers carry finely divided sand and mud in suspension, and, as their currents are checked upon entering quieter waters, the solid particles are deposited upon the bottom of the channels near the river mouths. The deposit gradually increases in area and also in thickness until it reaches the surface, and then by floods and by growth of vegetation it is raised beyond the limits of high water. At the head of each land area thus built up, the river divides into diverging branches, forming a triangle the base of which fronts upon the sea. A delta may occur at the junction of two rivers or at the entrance of a river into sea or lake; a fan-shaped deposit resembling a delta is sometimes found, also, where a river debouches from a mountainous region upon a plain. The large deltas are found at the mouths of great rivers which discharge into comparatively quiet seas. Coastal currents and strong tidal action remove the river deposits before they accumulate to any considerable thickness. The area of a delta varies with the size of the river, the amount of sediment carried and the length of time it has been deposited, and the relative quietude of the sea. The combined delta of the Ganges and Brahmaputra in India occupies more than 50,000 square miles, and the deposit has been found in places to be nearly 500 feet thick; that of the Nile is 200 miles wide at the base of the Mediterranean Sea and 100 miles long. The Mississippi delta is irregular in form, but it affords a fine illustration of the manner in which a river extends its channel seaward. Its area is about 12,500 square miles, and it is advancing into the Gulf of Mexico at the rate of about 260 feet a year. In Italy the Po has constructed a delta so rapidly that the city Adria, which in ancient times was a port of sufficient importance to have given its name to the Adriatic Sea, is now about 15 miles inland. Delta lands are usually fertile, but by reason of their low elevation they are often unhealthy, and their cultivation is hindered by inundations during storms and floods. Consult Geikie, *Text-Book of Geology* (London, 1903). See RIVER; SHORE.

DELTOID MUSCLE. See MUSCLE.

DELUC, *de-lyuk'*, JEAN ANDRÉ (1727-1817). A Swiss geologist and meteorologist. He was engaged in mercantile pursuits until nearly 50 years of age; but within that time, assisted by his brother, he assembled a fine museum of mineralogy and natural history. He removed to England in 1773, was made a fellow of the Royal Society, and appointed reader to Queen Charlotte, a position which he held for many years, and which afforded him ample time for study. He invented a hygrometer, a portable barometer, etc., and carried out many interesting experiments in physics and meteorology. His principal geological work is *Lettres physiques et morales sur les montagnes et sur l'histoire de la terre et de l'homme* (1778). In this work he endeavored to reconcile the Mosaic account of creation with the data of science by extending the six days of Genesis to so many geological epochs. In 1809 he described the dry pile or electric column in a paper sent to the Royal Society. He also published *Recherches sur les modifications de l'atmosphère* (2 vols., 1772; 2d ed., 4 vols., 1784); *Traité élémentaire de géologie* (1809); *Voyages géologiques en France, en Suisse, et en Allemagne* (2 vols., 1813).

DELUGE (OF., from Lat. *diluvium*, flood, from *diluere*, to wash away, from *di-*, away + *luere*, to wash). A flood of waters supposed by many peoples to have submerged the whole earth, or a large part of it, in primeval times, involving the destruction of all, or nearly all, life upon the planet. The most unmistakable evidence of a belief in such a flood is found in the literary remains, not only of the ancient Hebrews, but also of India, Persia, Babylonia, Syria, Asia Minor, and Greece. In one form or another it also seems to have existed among the aborigines of America and Polynesia, according to the testimony of Christian missionaries, whose accounts, however, cannot always be accepted without caution. On the other hand, there is practically no trace of a flood story in Africa, not even among the ancient Egyptians, though an earlier form of one may have been familiar in the Nile valley. Aside from Greece, and possibly Luthuania, there is none in Europe.

Of course the most obvious way to account for this widespread story is to suppose that there really was a flood. The fact that the Bible gives a detailed and intelligible account of one was formerly generally regarded by Jews and Christians as unquestionable evidence that it occurred; and the story of it in other nations was considered remarkable confirmation of the Bible narrative. The organic remains found everywhere in the rocks of the earth's surface were also held to prove that the waters had covered every known country and risen over the highest hills. With the progress of geology it became evident that most of the stratified rocks demanded an earlier origin than a few thousand years, and the influence of the deluge was consequently restricted to the slightly altered superficial deposits. But many of these were found to belong to a period vastly anterior to any historical epoch and to have been produced by a long-continued action under uniform conditions, viz., regional glaciation, which was most active during that portion of geological times known as the Glacial period. Consequently there arose a tendency to regard a Noachian deluge as having been of merely local extent, and this explanation was adopted by

certain commentators on the narrative of Genesis. At the present time the most important discussion of the subject belongs to the department of comparative religion and mythology.

By far the earliest and most important of all deluge stories outside of the Bible is the Babylonian. Through the excerpts from Berossus (c.330-260 B.C.), made by Alexander Polyhistor (died c.40 A.C.), and preserved by Josephus, Eusebius, and Georgius Syncellus, one version of the Babylonian story has long been familiar. It relates how, in order to escape the flood, the Babylonian King, Xisuthrus, was commanded to enter a vessel with wife, children, friends, and a pilot, and to steer "towards the gods"; and how, when the waters had subsided, he sent out birds three times, grounded on a Kordyanian mountain in Armenia, disembarked, sacrificed to the gods and was translated. In 1872 George Smith discovered another version, forming the eleventh tablet of the Gilgamesh epic. According to this story, Anu, Ellil, Ninip, and Ennugi sent out a destroying flood (*abubu*), but Ea, determined to save Ut-napishtim of Shurippak, advised him to "build a house, to construct a ship," and to take with him into it "seeds of life of all kinds." He accordingly constructed his house, or boat, coated it within and without with bitumen (*kupru*), and made apartments in it. His possessions, family, relatives, laborers, the cattle and the beasts of the field, Ut-napishtim brought into the house. Then the rain fell, the storm arose, and darkness covered the earth. All living beings were destroyed, except those in the house. On the seventh day Ut-napishtim opened the window, and soon the ship grounded on the mountain of Nizir. Seven days later he sent out a dove, a swallow, and a raven. The dove and the swallow returned, the raven did not. Ut-napishtim offered a sacrifice on the mountain, and the gods "smelt the pleasant odor." Ea rebuked Ellil for ordering such a deluge, when he might have punished men by beasts, famine, or pestilence, and Ishtar, who had already during the deluge expressed her sympathy with mankind, now lifted up her gems made by Anu (probably the rainbow), which would remind her forever of the flood. Ea pacified Ellil's disappointment at the deliverance of Ut-napishtim, and Ellil himself went on board the ship and announced that Ut-napishtim and his wife were thenceforth to be gods and live "afar off, at the mouth of the rivers." These tablets containing the Gilgamesh epic were found in the library of Asurbanipal (668-625 B.C.) at Kuyunjik, but they were only copies of originals found in turn by Asurbanipal's scribes in the temple archives at Uruk (modern Warka). Several fragments have since been found, giving the dimensions of the ark, and directions concerning food, treasures, men, and animals to be taken into it. Especially interesting is a tablet published by Peiser (*Zeitschrift für Assyriologie*, Leipzig, 1889), giving a map of Babylonia, surrounded by the ocean at the time of Ut-napishtim "in the year of the great serpent," and probably dating from the ninth century B.C. An earlier reference to the flood is in a fragment published by Scheil (*Recueil de travaux*, Paris, 1878), dated the 28th of Shebat of the year when Ammi-zadugga (1973 B.C.) built the fortress of Ammi-zadugga. The hero of the flood (*abubu*) is here called Atra-hasis, which, reversed (Hasis-atra), is evidently Berossus' Xisuthrus. A fragment like-

wise referring to Atra-hasis was published by Jensen in *Keilinschriftliche Bibliothek*, vol. vi (Berlin, 1900). Another fragment has more recently been published by Hilprecht, *Der Neue Fund zur Sintflutgeschichte* (Leipzig, 1910). While he assigns it to the Isin period, other Assyriologists are inclined to date it in the Kassite period (1761-1185 B.C.). Finally, Poebel in 1913 discovered a Sumerian original coming from Nippur. The hero's name is here Ziusgiddu. There are references to Ea's advice, the seven days of storm, the great boat, the sacrifice, and the defilement of Ziusgiddu.

The narrative in Genesis (chaps. vi.-ix) is regarded by many modern critics as made up of two versions interwoven. This was recognized by Jean Astruc (q.v.) as early as 1753. Using as a clue the divine names Yahwe and Elohim, he roughly outlined the two accounts. At the present day his intuition has been widely accepted, and scholars proceed to rearrange the material and assert that the Yahwistic narrative is found in Gen. vi. 5-8; vii. 1-5, 7-10, 12, 16b, 17, 22, 23; viii. 26, 3a, 6-12, 13b, 20-22. The flood is represented as sent because of man's wickedness. It is occasioned by a rain lasting 40 days. Noah is saved with his family in an ark, or house. With him are a pair of all unclean animals, and seven pairs of all clean animals. The flood comes after seven days and destroys all living things on the earth. At the end of 40 days Noah sends out a raven, which does not return; then a dove, which returns with an olive twig; and, after seven days the dove is again sent out, and this time does not return. Seven days later Noah disembarks, builds an altar, and offers a sacrifice of which Yahwe smells the "rest-giving odor" and promises not to destroy the world again. Portions of another narrative are found in Gen. vi. 9-22; vii. 6, 11, 13-16a, 18-21, 24; viii. 4, 5, 13, 14-19, ix. 1-17. Noah is represented as a just and perfect man whom Elohim desires to save and therefore commands to build an ark, giving its exact measurements. Noah is to take into it his family and of all living beings a pair. The flood is brought about by the subterranean waters of the great abyss breaking through the openings in the earth's crust and the windows of heaven being opened. It begins in the six hundredth year of Noah's life, on the seventeenth (or more probably, according to the Greek version, the twenty-seventh) day of the second month. It increases during 150 days, or five months of a solar year, and begins to decrease in the seventh month. The ark then grounds on one of the mountains of Ararat (Urartu; see CHALDIANS). The waters decrease until the tenth month, when, on the first day, the tops of the mountains are seen. On the first day of the first month in the six hundred and first year of Noah's life the ground is dry, and on the twenty-seventh of the second month, consequently after a full solar year, Noah leaves the ark and is blessed by Elohim, who points to the bow in the sky as a guarantee that a flood shall not again occur.

The striking similarity between the Genesis narrative and the Babylonian account is manifest, and has been explained in two ways. Both records have been thought to be independent developments of an old Semitic tradition; and the one has been said to be copied from the other. Some scholars who, in view of the uncertainty of the textual transmission, are not inclined

to attach so much weight to the alteration of the divine names in the Masoretic text admit the probability of redactional additions due to a different tradition. The fact that the story has now been found in the Sumerian renders the second alternative more probable. Those who believe that the Hebrew narrative is taken from the Babylonian differ as to the time when this is likely to have taken place. In Genesis the history of existing tribes seems to be traced back to their earliest progenitors without the interruption of a flood. This has given rise to the theory that one of the Pentateuchal sources did not contain this story originally, but that it was interpolated either after contact with the Assyrians in the eighth century, or, since the waters of Noah are first quoted by Deutero Isaiah, not long before 540 B.C. by a Babylonian Jew possibly at Uruk, and that the story was afterward supplemented by Ezra, who was familiar with a version having greater affinity to the Sippara recension. On the other hand, it is held by some scholars that the story found its way into Syria before the Hebrew invasion, as was the case with other myths (see BABYLONIA), and that it was presented in different recensions in Palestine. Absence of polytheism in the Hebrew is an unquestionable advance in thought, but it was not made without a sacrifice. Instead of a divided council of gods in which, through Ishtar and Ea, sympathy with the whole human race found fine expression, and mercy won the day over justice unsoftened by kindness, the one all-powerful God became responsible for the ruthless destruction of life, and His partiality to those finding favor in His eyes became accentuated.

As to the origin of the Babylonian story, and also of the Hebrew narrative, if it be independent of the former, it has been maintained by some scholars that an actual occurrence, such as the incursion of a tidal wave through an earthquake, the destruction of a single city through a rainstorm, the flooding of some district from a system of canals not properly protected, or the annually recurring inundation of a river, may have given rise to it. But it is far more probable that the Babylonian account, at any rate, originated in a myth describing the passage of the sun god in his boat through the heavenly ocean. When the present order of the world was regarded as the creation of the sun god, after a successful conflict with the earth-encircling ocean, it is natural that this myth should, in course of time, take the form of a deluge story relating the escape of a solar hero in the year of the great serpent. This conclusion is also indicated by the fact that the story of the flood is told on the eleventh tablet of a series manifestly representing the course of a solar personage through the signs of the zodiac. In the great cosmic year the sun god meets the cataclysm of waters in Aquarius, as in the solar year he encounters in Shebat, the eleventh month, the inundation of the river.

This mythical origin is believed to be confirmed by the flood stories of Greece, India, and Persia, as well as by the American and Polynesian accounts. The story of Deucalion's flood is known to us through Pindar (died c.440 B.C.), *Olymp.*, ix, 37 et seq.; and Ovid, *Metamorphoses* l, 240; that of Ogyges through Nonnus (c.400 A.D.), *Dionysiaca*, iii, 96; that of Dardanus also through Nonnus, *ib.*, iii, 215 et seq. Deucalion means "the little Zeus," and this young sun

god steers in his ship for Parnassus, the mountain of the gods. The Phrygian myth, of which the bronze coins of Apamea bear witness, in the third century A.D., has evidently been influenced by the Jewish account, as the name "Noe" shows; and the same is true of the Syrian story in Lucian's *De Dea Syria*, xii. On the other hand, the Indian flood story is quite independent of the Semitic. It is found in its earliest form in *Satapathabrâhmana* (c.600 B.C.); then in the *Mahâbhârata* and *Bhagavata Purâna*. Manu, son of Vivisvat, is a solar hero. His divine character is shown by the fact that after the flood he creates not only a new human race, but even gods. Brahma in the form of a fish carries him through the waters. The Iranian story (*Vendidad*, ii, 46 et seq.) is in too fragmentary a condition to permit a conclusion. It is uncertain whether the flood is in the past or in the future. Yima seems to be identical with Mimer; if so, the myth belongs to a different order. The medium through which the Mexican, Peruvian, and Cuban flood stories have come to us renders it difficult to determine their original form; but the somewhat better authenticated Polynesian stories seem beyond a doubt to have their origin in a sea myth. Consult: Usener, *Die Sintflutsagen* (2d ed., Bonn, 1911); Andree, *Die Flutsagen ethnographisch betrachtet* (Brunswick, 1891); Winternitz, in *Mitteilungen der Anthropologischen Gesellschaft in Wien*, vol. xxxi, pp. 212 ff. (1901); Murad, *Ararat und Masis* (Heidelberg, 1901); Vail, *The Deluge and its Causes* (Chicago, 1905); Haupt, *Das Babylonische Nimrodepos* (Leipzig, 1891); Jensen, *Das Gilgamesh Epos* (1906); Gordon, *Early Traditions of Genesis* (1907); Hilprecht, *The Earliest Version of the Babylonian Deluge Story* (Philadelphia, 1910); Ungnad, in Gressmann, *Altorientalische Texte und Bilder* (Tübingen, 1909); Gunkel, *Genesis* (3d ed., Göttingen, 1910); Fiske, *The Great Epic of Israel* (1911); Rogers, *Cuneiform Parallels to the Old Testament* (New York, 1912); Poebel, in *Babylonian Publications of the Museum of Archaeology of the University of Pennsylvania*, vol. vi, p. 1 (Philadelphia, 1913); Jastrow, *Hebrew and Babylonian Traditions* (New York, 1914).

DELUSION. See INSANITY.

DELVAU, dell'vô', ALFRED (1825-67). A French author. He was born in Paris, the son of a tanner, and after having been secretary to Ledru-Rollin in 1848, while the latter was Minister of the Interior, he devoted himself entirely to literary pursuits. He became a prolific writer and produced works of the most varied description, among which his skillful delineations of Parisian customs and curious phases of life are the most interesting and may lay claim to some merit as contributions to the local history of civilization. Of these may be quoted: *Grandeur et décadence des grisettes* (1848); *Les dessous de Paris* (1860); *Histoire anecdotique des cafés et des cabarets de Paris* (1862); *Les Cythères parisiennes* (1864); *Les heures parisiennes* (1866); *Les lions du jour* (1867). He also published: *Histoire de la révolution de Février* (1850); *Les murailles révolutionnaires* (1851), a curious collection of decrees and proclamations, placarded during the Second Republic; *Au bord de la Bièvre, impressions et souvenirs* (1854); *Gérard de Nerval, sa vie et ses œuvres* (1865); *Henri*

Murger et la Bohème (1866); *Les sonneurs de sonnets, 1640-1866* (1867). Under the pen name of "Junius" he contributed a lively series of letters to the *Figaro* in 1861.

DELVAUX, dël'vô', LAURENT (1695-1778). A Flemish sculptor. He was born in Ghent and studied his art under Gery Heldenberg and Dieudonné Plumier in Brussels. In 1717 he went to London, where he spent nine years and executed numerous works for Westminster Abbey and other churches and for palaces, partly in conjunction with the sculptor Pieter Scheemaecker, of Antwerp. From 1727 to 1733 he studied antique art in Italy and, after his return to Brussels, was appointed court sculptor to the Regent Maria Elizabeth and later to Duke Charles of Lorraine, for whom he modeled busts of Maria Theresa and Louis XV. He afterward settled at Nivelles and there practiced his art until his death. His productions, characterized by vigorous treatment, show the influence of classic art, and his religious works also that of Bernini. They include a colossal statue of Hercules in the New Museum of Brussels; the mausoleum of Leonhard van der Noot in the Carmelite Church, Brussels; a pulpit, representing the "Tree of Life," in the cathedral in Ghent—the best specimen of Flemish sculpture in the eighteenth century; a statue of St. Livin in the Museum in Ghent.

DELVIGNE, dël've'ny', HENRI GUSTAVE (1799-1876). A French soldier and inventor, born in Hamburg. He became a captain in the French infantry service, from which he resigned on the outbreak of the revolution of July (1830). In 1826 he invented a rifle known by his name. In this rifle the chamber was smaller than the bore, with which it was connected by a spherical surface equal in radius to the ball used. The powder was poured from the muzzle into the chamber, upon which the ball rested when dropped into the bore. The ball was then made to take the rifling grooves by ramming. This invention marks an important step in the improvement of the rifle. Delvigne also devised some life-saving apparatus, particularly life rockets. His publications include *Exposé d'un nouveau système d'armement pour l'infanterie* (1836).

DELYANNIS, or **DELIJANNIS**, THEODOROS (1826-1905). A Greek statesman, born at Kalavryta, in the Peloponnesus. He studied at Athens and entered the government service (Department of the Interior) in 1843, and was rapidly promoted. He was Minister of Foreign Affairs in the provisional government of 1862-63 and Minister to France in 1867. In the cabinets from 1868 to 1878 he held office, either as Minister of Foreign Affairs, or of Finances, or of Worship and Instruction. He represented Greece at the Berlin Congress in 1878 and obtained an extension of territory for his country. In 1885 he formed a new ministry, but his policy led to a blockade of the Greek coast by a fleet of the Great Powers, and he resigned in 1886. He was Prime Minister again in 1890-92, but his mismanagement of finances led to his dismissal. He held the office a third time from 1895 to 1897, when he involved Greece in the war with Turkey and was obliged to resign. He was Premier again in 1902-03 and 1904-05. On June 13, 1905, he was assassinated by a gambler whose class interests he had antagonized. His political history was for the most part not without opposition to Trikoupi (q.v.).

than whom he was more popular, but not a greater statesman.

DEMADES, dêma-dê's (Gk. Δεμάδης, *Dê-madês*). A gifted Athenian orator and unscrupulous politician of the fourth century B.C. For the 12 years preceding Alexander's death he was a leader in Athens with Phocion (q.v.), and so was the enemy of Demosthenes. Though friendly to the Macedonians, he accepted bribes from the other side; for this he was fined several times and at last deprived of his civil rights. When Antipater was advancing on Athens in 322 B.C., Demades was restored to full standing as a citizen, and he and Phocion were sent as ambassadors to him. Their acceptance of the terms offered, terms which were unfavorable to Athens, was made the basis of a charge that they had been bribed. Some years later Antipater discovered that Demades had been false to him, and he put him to death (c.318 B.C.). None of his speeches is extant; in antiquity 14 orations were current under his name, but they were all recognized to be spurious. Extracts from one of these (Περὶ Διδεκαετίας, *Peri Dōdekaetias*) are edited by Haupt in *Hermes*, vol. xiii, pp. 498 et seq. We have also a collection of sayings attributed to him, *Demadea*. Consult Blass, *Attische Beredsamkeit*, iii (Leipzig, 1887-93).

DEMAND. See DEMESNE.

DEMAND. A technical term of the common law, signifying a legal claim or obligation. It is defined by Lord Coke as "a term of law, of an extent greater in its signification than any other word except claim" (*Co Lit*, 291). In addition to the claims enforceable by actions, such as contracts, debts, obligations, etc., it includes, as well, all rights enforceable by entry, by seizure of goods, or by any other act. A release of all demands, therefore, is the most comprehensive release that can be given. The usual form of "general release," as it is called, is to release "all claims and demands whatsoever." See RELEASE.

The term "demand" is also employed in law in a narrower sense, derived from its general signification of a request, or summons, addressed to another in legal form, calling upon him to perform a legal duty which he owes to the demandant. Such a demand is frequently necessary to fix an inchoate legal obligation and to entitle the claimant to bring an action for its enforcement. Thus, under ordinary circumstances, no right of action arises for a breach of promise to marry unless a previous demand can be shown, and the same is true of all contract obligations in which the time of performance is not definitely fixed, as well as of others in which the time is not a material element. So, in other classes of rights, a demand and its refusal are frequently necessary to give to a wrongful act the sharpness and definiteness requisite to make a legal remedy available. For example, where goods are wrongfully detained by a finder, or by any other person whose original possession thereof was lawfully acquired, he must refuse a demand for them before he becomes liable in trover for a conversion; and so, before abating a nuisance, either personally or by action, a demand must usually be made upon the person maintaining it.

There are other cases in which, though a definite default has been made, entitling the injured party to sue without further notice, a demand for performance may yet be necessary

to enable him to avail himself of some more drastic remedy; as in the case of a failure to pay rent at the stipulated time, though an action will lie for the breach of contract, the landlord cannot enter for breach of condition and put an end to the lease without previous demand. It should be added that, in all cases in which a demand is requisite to fix a legal liability, the requirement is dispensed with if the party in default has put it out of his power to comply with it, and in some jurisdictions the courts have gone so far as to hold a demand unnecessary in all cases in which it would probably have been unavailing. See **BREACH**; **CONVERSION**; **LIABILITY**; **QUASI CONTRACT**; and consult the authorities referred to under these titles.

DEMAND AND SUPPLY. In political economy demand signifies the amount of a commodity that will be taken at a given price; supply the amount that will be offered at a given price. In the case of most commodities appearing on the market, the volume of demand increases and the volume of supply diminishes with every decline in price, and vice versa. There must be some price at which the volume of demand just equals that of supply; and this is the price that tends to rule in the market. Hence the axiom of political economy that price is determined by the equation of demand and supply.

While classical political economy explained prices current on the market by the equation of demand and supply and had no other formula even for the permanent prices of objects not reproducible, for goods that could be produced by labor another law governed prices in the long run—cost of production. If market prices, fixed by demand and supply, exceeded cost of production, supply would increase until prices were forced to a lower level; if market prices were inferior to cost, supply would diminish until prices rose. It is to be noted that the law of costs operates only through the mechanism of demand and supply.

In recent economic theory the law of demand and supply is accepted as a preliminary step in reasoning, but chief interest is held to centre in the forces underlying demand and supply. See **POLITICAL ECONOMY**.

DEMARATUS (Lat., from Gk. Δημάρατος, Demaratus). A Spartan king (c.510 to 491 B.C.). By the machinations of his colleague, Cleomenes (q.v.), he was deposed. He subsequently repaired to the Persian court and accompanied Xerxes as a counselor on that monarch's expedition against Greece.

DEMARCATIÖN (Fr. *démarcation*, from Lat. *de*, off, away, *ML. marca*, boundary, limit, mark), **LINE OF**. The historical and cartographical name given to an imaginary line running due north and south 100 leagues west of the Azores, established by a papal bull of Alexander VI on May 4, 1493, delimiting the spheres of Spanish and Portuguese possession in the New World. All new lands discovered east of this line were to belong to Portugal and all to the west to Spain. Dissatisfaction with this arrangement on the part of Portugal led to the conclusion of the Convention of Tordesillas between Spain and Portugal, June 7, 1494, sanctioned by a bull granted by Pope Julius II, Jan. 24, 1506, in which the line of demarcation was shifted 370 leagues west of the Cape Verde Islands, so that Brazil, as yet undiscovered,

subsequently fell to the share of Portugal. As between the two Iberian Powers, the terms of the convention were respected in fair measure, though disputes as to the exact determination of the line were frequent. The chief disputes were over the ownership of the Moluccas and Philippines, settled by the Treaty of Saragossa in 1529; and over the southwestern boundary of Brazil, which resulted in the abrogation of the line of demarcation and all agreements based thereon by a treaty of 1750. This treaty, however, was also abrogated in 1761 and all disputes involved were at length settled in 1779 by a new treaty. The other nations of Europe paid little regard to the papal bull. Consult Harris, *Diplomatic History of America* (New York, 1898), and Edward G. Bourne, *Essays in Historical Criticism* (ib., 1901).

DEM'AREST', WILLIAM HENRY STEELE (1863-). An American college president, born at Hudson, N. Y. After graduating from Rutgers College in 1883 and from New Brunswick (N. J.) Theological Seminary in 1888, he was ordained to the ministry of the Reformed church in America. He was pastor at Walden, N. Y. (1888-97) and at Catskill, N. Y. (1897-1901). In 1901-06 he was professor of church history at New Brunswick Theological Seminary, and in 1906 he became president of Rutgers College. He received the degree of LL.D. from Columbia University and Union College.

DEMARTEAU, de'mär'tô', GILLES (1722-76). A French line engraver. He was born in Liège, but studied and practiced his art in Paris. He is one of the most eminent exponents of the style of engraving in imitation of crayon drawing. He brought that process to great perfection, but was not, as is frequently stated, the inventor of it. For his services he received from Louis XV a pension of 600 livres, and in 1769 he was elected a member of the Paris Academy. His work comprises some 729 plates, for the most part after French masters, especially Boucher, including models for students, of which he seems to have created the typical academic style of drawing. Among the best are: "The Wounded Lycurgus," after Cochin, "Justice Protecting the Arts," after Cochin, "Entombment of Christ," after Stelaert; "The Education of Cupid" and "Venus Crowned," after Boucher; and some excellent portraits, especially that of the painter Charles Vanloo.

DEM'AVEND', MOUNT. An extinct volcano of Persia, in lat 36° N. and long 52° E., about 50 miles northeast of Teheran (Map: Persia, D 3). It has an altitude estimated at 18,500 feet and forms the loftiest peak of the Elburz chain, which separates the low shores of the Caspian Sea from the high table-land of Persia. Although no longer subject to eruptions, Demavend bears traces of comparatively recent activity. Its summit is conical and the crater still intact. At its base hot springs give evidence of the continued existence of volcanic heat at no great distance beneath the surface. A great deposit of sulphur covers the summit of Demavend and is brought down to the plains in bags as an article of commerce. The first European to make the ascent of Demavend was William T. Thomson, in 1837. Demavend towers high above the neighboring mountains, the adjacent summits not exceeding two-thirds of its elevation. At all times it has been a

conspicuous object from the great trade route between India and the West, along the edge of the Persian table-land. Zohak, a personification of the bad principle, was supposed by the Persians to be buried under Demavend.

DEMEEA, *dém'-é-a* or *dém'-é'-a*. See TZANA.

DEMIBINSKI, *dém-bén'skí*, *HENRYK* (1791-1864). A Polish and Hungarian general, born near Craoow, in Poland. He entered the Polish army in 1809, took part in the invasion of Russia by the French in 1812, and was made captain by Napoleon himself on the battlefield of Smolensk. He subsequently distinguished himself at Leipzig. After the fall of the Empire he returned to his native country and lived in comparative obscurity for some time. The Polish Revolution of 1830 called him again to arms. He obtained the command of a brigade of cavalry and exhibited heroic courage at the battles of Kuslev and Ostrolenka. Afterward he was engaged in the campaign in Lithuania and, returning to Warsaw, was made commander in chief of the national army, holding the post, however, for only three days. After the surrender of Warsaw to the Russians Dembinski went to France. In 1833 he proceeded to Egypt and entered the service of Mehemet Ali, but returned to Paris in 1835. Some months after the outbreak of the Hungarian insurrection Kossuth appointed him commander in chief of the main Hungarian army (Feb. 5, 1849). He drew up a line of campaign, but could not obtain the concurrence of Görgei, whose tardy arrival caused the loss of the battle of Kápolna (Feb. 26-27, 1849). Forced to retreat behind the Theiss, Dembinski resigned his command, but subsequently consented to act under Mészáros. He was appointed to the command of the Northern Hungarian army and strongly urged the necessity of uniting the cause of Hungary with that of Poland, proposing to lead an army into Galicia; but his advice was not taken. After the resignation of Kossuth, and the capitulation signed by Görgei at Világos (Aug. 13, 1849), Dembinski fled to Turkey. In 1850 he returned to France and began to write his *Mémoires* on the Hungarian war. He died in Paris in 1864. Consult Danzer, *Dembinski in Ungarn* (Vienna, 1873).

DEME, *dém* (Gk. *δήμος*, *dēmos*, district). One of the primitive subdivisions of ancient Attica. The word originally meant "a country district" and was applied to the rural communities or to the people living in the country in distinction from those living in the city. The *demes* existed from an early period and, according to tradition, were made constituent parts of the Athenian territory by Theseus, but they do not become historically important until the time of Clisthenes (508-507 B.C.). When Clisthenes (q.v.) abolished, for all but religious purposes, the four old Attic tribes and substituted in their stead 10 new tribes, he first divided the people territorially into a certain number of *demes* and then formed his tribes by arbitrary groupings of these *demes*. (See **ATHENS**, *History*.) The *demes* were thus the fundamental political units of the state. The number of *demes* established by Clisthenes cannot be determined; the statement of Herodotus that he made 100 cannot be fitted into our other information concerning his reforms. The *demes* were variously named—some with gentile or patronymic names, some from the trades carried on in them, some from plants that

grew in the neighborhood, and so on. Each *deme* had its presiding officer (*δήμαρχος*, *dēmarchos*), elected annually, its treasurer (*ταμίης*, *tamíēs*), its controller (*ἀντιγράφος*, *antigraphos*), and other officers, besides its assembly, which, convened by the *demarch*, transacted the public business of the *deme*. There was also for each *deme* a register wherein were enrolled, for political and other purposes, all the members of that *deme*. Membership in the *deme* was hereditary; it was retained without regard to the place of actual residence. Consult: Hermann, *Griechische Alterthümer* (Freiburg, 1882); Leake, *Demes of Attica* (London, 1820); Haussouillier, *La vie municipale en Attique* (Paris, 1883); Wachsmuth, *Stadt Athen*, vol. ii (Leipzig, 1890).

DE MENDOZA. See SANTILJANA.

DEMEN'TIA. See INSANITY.

DEMERARA, *dém'-rā'-rā*. A river of British Guiana (q.v.), South America, rising in the mountains of the interior, flowing north almost parallel with the Essequibo, and emptying into the Atlantic at Georgetown (Map: Guiana, British, F 2). It is about 200 miles long, 1½ miles broad at its mouth, and navigable by ships of considerable burden for 75 miles. Its affluents are numerous, though small. At its entrance into the ocean it affords a spacious harbor, obstructed, however, by a bar.

DEMESNE, *dé-mén'*, or **DEMAIN'** (OF. *demaine*, *domaine*, 'from Lat. *dominium*, right of power'). In the feudal system of land tenure, the dominion over land. But the dominion connoted by the term was the actual dominion of the freehold tenant, and not the theoretical dominion of the king or the mesne lord. It did not signify lordship of land, but the rights and the authority of the immediate owner. Such a tenant was said to hold "in his demesne" (*in dominio suo*). Blackstone distinguishes accurately between the allodial, or absolute, owner, outside the feudal system, who was described as holding the land "in his demesne," and the feudal tenant, whose dominion was qualified by adding the phrase "as of fee," indicating a real and yet subordinate dominion. But he was probably wrong in using the same term to describe the king's paramount lordship. The king, indeed, held lands in his demesne, there were and still are "demesne lands" of the crown, but they are the immediate property of the crown, owned and controlled by it, and not lands held of the crown by freehold tenants. See CROWN LANDS; FEUDALISM; TENURE.

Ancient *demesne* is a species of privileged copyhold tenure, surviving in a few ancient manors which formed part of the demesne lands of the crown in the time of the Conqueror and are so recorded in Domesday Book. These manors may now be in the hands of subjects. Tenure of ancient *demesne* is sometimes known as customary tenant right, privileged villenage, and villen socage. The abolition of the peculiar privileges which attended it, by statute in 1833, has assimilated it closely to ordinary socage tenure. Consult: Blackstone, *Commentaries on the Laws of England*; Vinogradoff, *Villénage in England*; Pollock and Maitland, *History of English Law* (2d ed., Cambridge and Boston, 1899). See COPYHOLD; SOCAGE.

DEMETER. See CERES.

DEMETRIUS (Gk. *Δημήτριος*, *Dēmétrios*). A sculptor of Attica, who flourished in the early part of the fourth century B.C. He was espe-

cially celebrated for the realism of his portraits, though some censured his excessively close imitation of natural defects. Consult E. A. Gardner, *A Handbook of Greek Sculpture* (London, 1911), and P. Gardner, *The Principles of Greek Art* (New York, 1914).

DEMETRIUS, called **PHALEREUS** (Gk. Δημήτριος Φαληρέας, *Demétrios Phaléreus*) (c.345–283 B.C.). A Greek orator and philosopher. He was born at Phalerum, Attica, and was a pupil of the philosopher Theophrastus. In 317 B.C. he was appointed Governor of Athens by Cassander (q.v.) and held that office successfully for 10 years. When Athens was taken by Demetrius Poliorcetes (q.v.) in 307 B.C., Demetrius Phalereus fled, first to Thebes, then to Ptolemy Lagus at Alexandria. Later he was banished from Alexandria and withdrew to Upper Egypt, where he died. Demetrius wrote many historical and philosophical works, but only fragments of these remain. The rhetorical treatise *On Style* (Περί Ῥητορίας, *Peri Herméneias*), ascribed to him, is probably a composition of a later date. The treatise was edited, with notes, Eng. trans., etc., by Roberts (Cambridge, 1902). The ancient critics all praise the suavity, elegance, polish, and subtlety of his speeches; yet his style was "effeminate, emotional without being inspiring, florid, tricked out with the spurious charms, the paints and dyes of a courtesan." Consult: Wright, *A Short History of Greek Literature* (New York, 1907); Christ-Schmid, *Geschichte der Griechischen Litteratur*, vol. ii (5th ed., Munich, 1911); the article "Demetrius" No. 85, in Pauly-Wissowa, *Real-Encyclopädie der classischen Altertumswissenschaft*, vol. iv (Stuttgart, 1901).

DEMETRIUS. 1. A young Athenian in love with Hermia in Shakespeare's *Midsummer Night's Dream*. 2. The son of Tamora, Queen of the Goths, in Shakespeare's *Titus Andronicus*. 3. A friend of Antony in Shakespeare's *Antony and Cleopatra*. 4. Colia's princely lover in Fletcher's *The Humorous Lieutenant*.

DEMETRIUS. The assumed name of four pretenders to the throne of Russia between the years 1603 and 1613. In 1584 Ivan the Terrible died, leaving two sons, Feodor and Demetrius, the former of whom ascended the throne, but proved a weak ruler and fell completely under the control of his brother-in-law Boris Godunoff. The second son, Demetrius, was brought up at a distance from the court and when only 9 or 10 years old either was accidentally killed or was put to death. In 1598 Feodor died also, and Boris ascended the throne, but his tyrannical measures rendered him very unpopular. In 1603 a rumor spread through Russia that Demetrius was not dead, but had appeared in Poland. The fact was that a person calling himself Demetrius, but who, it is said, was in reality a monk named Gregory Otrepiëff, belonging to the convent of Tuhodov, had succeeded in persuading Prince Wisniewski in Lithuania, and afterward Mnisek, Palatine of Sandomir, that he was the true son of Ivan. The latter introduced him to Sigismund III, King of Poland, who saw in him a useful instrument for introducing Polish influence into Russia and so aided him in his designs against Boris. Towards the close of 1604 Demetrius, supported by a number of Polish nobles, invaded Russia, defeated Boris, who died in April, 1605, and entered Moscow in June, 1605, the people receiving him with great enthusiasm. He ruled for

some months with vigor and ability; but his manifest predilection for the Poles soon excited the Russians against him, and the arrival of his bride, Marina Mnisek, the daughter of the Palatine of Sandomir, with a Polish retinue on May 8, 1606, brought the discontent to a head. Eleven days later an insurrection broke out in the capital, headed by Prince Vasilii Shuiski. The pretender was slain, and a multitude of the Poles massacred. Vasilii Shuiski now ascended the throne; but in 1607 an individual appeared alleging that he was Demetrius and that another had been mistaken for him in the Moscow massacre. He found a considerable number of adherents, and Marina acknowledged him to be her husband. The Poles helped him, and for some time it seemed likely that he would succeed; but at length he was killed at Kaluga in 1610. The third pretender gave himself out to be the son of the first. After a brief career he fell into the power of the Czar and was strangled. The fourth made the same pretensions, but, falling into the hands of the Cossacks, was carried to Moscow, where he was executed in 1613. Consult: Scipkin, "Wer war pseudo-Demetrius I.," *Archiv für slavische Philologie*, vol. v (Berlin, 1898, 1900); Munro, *The Rise of the Russian Empire* (London, 1900); Kostomarov, *Les faux Dmitri* (St. Petersburg, 1864); Merimée, *Les faux Demetrius* (Paris, 1858); Eng. trans. by A. R. Scoble.

DEMETRIUS I, called **POLIORCETES** (Δημήτριος Πολιορκητής, *Demétrios Poliorkētēs*, "Demetrius, Besieger of Cities") (c.337–283 B.C.). A king of Macedonia. He was the son of Antigonos Cyclops and Stratonice. At an early age he assisted his father in wars with the generals of Alexander, was defeated by Ptolemy, the son of Ptolemy Lagus, at Gaza in 312, but soon after retrieved his fortunes by gaining a victory over Cillex in Syria. In 307 he freed Athens from the rule of Cassander (q.v.), expelled the garrison under command of Demetrius Phalereus (q.v.), and was received in the city with divine honors. In 306 he defeated Ptolemy in a naval battle at Cyprus and destroyed the naval power of Egypt. In 305 he laid siege to Rhodes, but was unable to take the city. Afterward (301) he won the enmity of Seleucus, Cassander, and Lysimachus; he was defeated at Ipsus by Seleucus and Lysimachus. His power in Greece now passed from him for a time, but in 295 he recovered Ægina, Salamis, and Athens. In 294 he murdered Alexander, brother of Antipater, and seized the throne of Macedonia, but was afterward expelled by Pyrrhus and finally surrendered to Seleucus (286), whose prisoner he remained until his death (283). Demetrius is famous for having conducted his sieges on a grand scale, with all the paraphernalia known to the military science of that age. His ingenuity in devising new siege weapons was shown especially in his attack on Rhodes. His life was written by Plutarch.

DEMETRIUS I, called **SOTER** (Gk. Δημήτριος Σωτήρ, *Demétrios Sôtēr*) (c.187–150 B.C.). King of Syria from 162 to 150 B.C. He was the son of Seleucus IV Philopator and lived at Rome as a hostage during the reign of his father and that of Antiochus Epiphanes, who had usurped the throne, after the death of Philopator (175). He escaped from confinement in 163, overthrew and killed Antiochus V Eupator, and, with the aid of the Romans, established himself firmly in power. He carried on war against the Jews

and the Cappadocians and freed the Babylonians from the rule of the satrap Timarchus and so won the title of Soter, "Savior." He fought with the Maccabees. He fell in battle against the usurper Alexander Balas.

DEMETRIUS II. A king of Macedonia (c.230-229 B.C.). He was the son of Antigonos Gonatas (q.v.) and grandson of Demetrius Poliorcetes (q.v.) and was engaged in continual warfare with the peoples to the north of Macedonia and with the Achaean and the Aetolian leagues.

DEMETRIUS II, NICATOR (?-c.125 B.C.). A king of Syria, son of Demetrius Soter (q.v.). After his father's death he lived many years in exile, but with the assistance of Ptolemy Philometer, whose daughter he married, he secured the throne of Syria in 146 B.C. About 138, in an expedition against the Parthians, he was defeated and taken prisoner. After 10 years of captivity he was restored to power (c.128), but was vanquished by a pretender to his throne in a battle near Damascus. He fled to Tyre and there perished by assassination.

DEMETRIUS III, variously known as EUCERES, EVERGETES, and PHILOMETER, King of Syria from 94 to 88 B.C. He was the grandson of Demetrius Nicator and ruled jointly with his brother Philip, but was dethroned by him, with the aid of the Arabs and the Parthians, and died a prisoner among the Parthians.

DEMETRIUS OF BYZANTIUM, *bi-zân'-shi-ûm*. A Peripatetic philosopher. He is supposed to have been the man who tried to dissuade Cato Uticensis from suicide. Part of his book *On Poets* is quoted by Athenæus and Philodemus. Parts of book ii of this work have been recovered at Herculaneum. Consult Scott, *Fragmenta Herculaneusia* (Oxford, 1886).

DEMETRIUS OF SURIUM. A cynic philosopher, who lived in Rome for the greater part of the years 40 to 80 A.D. He enjoyed the friendship of Seneca, who observes that Nature made him to be at once an example and a reproach to the world. (Consult *De Beneficiis*, vii, 8, 2.) He was a consistent opponent of the monarchy. He refused an offer of a large sum by Caligula, meant to win him from his opposition.

DEMETRIUS TRICLINUS (Lat., from Gk. Δημήτριος Τρικλίνος, *Dēmétrios Triklínos*). A Greek scholiast of the fifteenth century. In addition to his recension of the text of Sophocles, which served as the basis of several subsequent revisions, he composed scholia on the same poet, and on Hesiod, Pindar, and Aristophanes, and works on the metres and figures of Sophocles.

DEMETRIUS ZENUS (Lat., from Gk. Δημήτριος Ζήνος, *Dēmétrios Zénos*). A writer of Zacynthus, who lived in the sixteenth century. His works include a translation of the *Batrachomyomachia* (about 1530) into modern Greek in the *στίχοι πολιτικοί*, *stíchoi politíkoí*, or popular verses, and a poem in the same measure on Alexander the Great (printed at Venice, 1829). The former work has been edited by Müllach (Berlin, 1837). It was printed, with a Latin translation, by M. Crusius, in Igen's edition of the *Homeric Hymns* (Halle, 1796).

DEMETZ, *de-mätz*, FRÉDÉRIC AUGUSTE (1796-1873). A French prison reformer, born in Paris. He studied law and was subsequently made a judge. In 1836 he was sent by the French government to the United States for the purpose of studying American penitentiaries.

The results of his investigations were published in 1839 under the title *Rapports à Monsieur le comte de Montalivet sur les pénitenciers des États-Unis*. One of the conclusions of this report is that the penitentiaries of Pennsylvania, organized on the plan of isolating the young prisoners, were inefficient. Demetz's chief services, however, were in connection with a reformatory founded by him in 1840 on an entirely novel plan at Mettray, near Tours. Hundreds of young criminals were gathered by him into this reformatory at the expiration of their terms of imprisonment, and there they were given instruction and agricultural work which entitled them to moderate compensation. The results thus achieved led to the introduction of this system in several other European countries.

DEMI', or **DEMY** (Fr. *demi*, Lat. *dimidius*, half). A term in heraldry. An animal is said to be demi when only the upper or fore half of it is represented. In inanimate objects the dexter half per pale is usually intended, when it is said to be demi, though a demi fleur-de-lis, e.g., may be a fleur-de-lis divided per fess.

DEM'ICAN'NON. A large gun used in the sixteenth and seventeenth centuries and perhaps later. It is said to have had a length of 12 to 14 feet, a diameter of bore of 6½ inches, and to have fired a ball of 33 pounds' weight. There is some doubt about this, as a solid spherical shot for a 6½-inch gun ought to weigh over 40 pounds. The point-blank range was estimated at 162 paces and its range at 2000. See GUNS, NAVAL.

DEM'ICUL'VERIN. A gun of about the same date as the demicannon (q.v.). It was about 9 feet long, had a bore of about 4.5 inches, and threw a ball of nine pounds' weight. Its point-blank range was about 174 paces and its range 1800. See ARTILLERY; ORDNANCE.

DEMIDOFF, *dyě-mě'dóf*, Princes of San Donato. A noble and wealthy Russian family, the most distinguished members of which are: 1. NIKITA DEMIDOFF (c.1665-c.1720), the founder of the family, a runaway serf, who amassed an immense fortune as a manufacturer of arms. He established numerous forges and foundries in the Urals and died after 1720. 2. AKINF DEMIDOFF (died c.1740), son of Nikita, brought over skilled German miners to examine the rich deposits of gold, silver, and copper in the river valleys of Siberia. The government made him a councillor of state. 3. PROKOR (1710-1786), son of Akinfi, established a commercial school in Moscow in 1772. 4. PAUL DEMIDOFF (1738-1821), cousin of Prokor, traveler and scientist, gave a museum of natural history to the University of Moscow and founded the Demidoff Museum of Yaroslavl. 5. NIKOLAI, COUNT DEMIDOFF (1773-1828), nephew of Paul, married the Countess Strogonoff and became a privy counselor and Imperial chamberlain. He distinguished himself in the war against the Turks. In 1812 he raised a regiment and fought at its head against Napoleon. 6. ANATOLE (1812-70), son of Nikolai, displayed great enthusiasm for letters and the sciences. His principal book, published in Paris in 1839, entitled *Travels in Southern Russia and Crimea*, is the record of a great scientific expedition undertaken at his expense. In 1841 he married Mathilde de Montfort, daughter of Jerome Bonaparte. The marriage was dissolved by mutual consent in 1846. Hospitals, schools, and

museums all over Russia testify to the munificence of the Demidoffs.

DE MILLE, dé-mil', HENRY CHURCHILL (1850-93). An American playwright, one of the authors of *The Wife*, *Lord Chumley*, and other pieces. He was born in North Carolina and educated at Columbia College, from which he was graduated in 1875. In 1882 he became examiner of plays at the Madison Square Theatre, and later he was an actor under A. M. Palmer's management. His first play, *Delmar's Daughter*, was produced in 1883 without success. In 1884 he produced *The Main Line*, by himself and Charles Barnard. In collaboration with David Belasco he wrote *The Wife* (produced in 1887 at the Lyceum), which proved a great success, and in the following seasons they brought out *Lord Chumley*, *The Charity Ball*, and *Men and Women*. In 1891 he adapted from the German *The Lost Paradise*. Consult Montrose J. Moses, *The American Dramatist* (Boston, 1911).

DE MILLE, JAMES (1833-80). A Canadian author, born at St John, New Brunswick. He graduated at Brown University in 1854, was professor of classics in Acadia College (Wolfville, Nova Scotia) in 1860-65, and from 1865 until his death occupied the chair of history and rhetoric in Dalhousie College (Halifax, Nova Scotia). De Mille wrote more than 30 novels, of which the best are *Helena's Household* (1868), a Roman tale of the first century, and *A Strange Manuscript Found in a Copper Cylinder* (1888), posthumously published. *The Dodge Club* (2 vols., 1866-69) is a humorous book of travel. His other publications include *Andy O'Hara* (1860); *The Soldier and the Spy* (1865); *The American Baron* (1870); *The Lady of the Ice* (1870); *Comedy of Terrors* (1872); *The Living Link* (1874); *The Winged Lion* (1877, 2d ed., 1904); *A Castle in Spain* (1882-83). *A Treatise on Rhetoric* (1878).

DE MILLE, WILLIAM CHURCHILL (1878-). An American playwright, born at Washington, N. C. He graduated from Columbia University in 1900 and studied also at the American Academy of Dramatic Arts in New York City. He is co-author of the following plays: *The Genius* (1906), *Classmates* (1907), *The Royal Mounted* (1908), and is author of *Strongheart* (1905), *The Warrens of Virginia* (1907), *The Land of the Free*, and *The Woman*, which was novelized by Albert Payson Terhune in 1912.

DEMIMONDE, dém'i-mönd or de-mé'mönd' (Fr., half world). The better class of courtesans in Paris and other cities. The term originated with Alexandre Dumas fils, who used it in the phrase meaning "half-and-half society."

DEM'ING. A village and the county seat of Luna Co., N. Mex., 86 miles northwest of El Paso, Tex., on the Southern Pacific, the Atchison, Topeka, and Santa Fe, and the El Paso and Southwestern railroads, and on the Mimbres River (Map. New Mexico, B 6). It is a health resort, contains a hospital, and has important commercial interests, being the trade centre of a cattle and wool growing and mining region. Settled about 1881 and incorporated in 1901, it is governed under a charter of the latter date by a mayor, elected for a term of three years, and a unicameral council. Pop., 1910, 1864.

DEMING, CLARENCE (1848-1913). An American editor, born at Litchfield, Conn. Gradu-

ating from Yale University in 1872, he served as assistant editor of the *Troy Whig* (1872-73), as night editor of the New Haven *Palladium* (1874-75), and as assistant news editor, editorial writer, and traveling correspondent for the New York *Evening Post* (1875-84). For several years he edited the New Haven *News* and later he was associate editor and editorial writer for the *Railroad Gazette* (now *Railway Age Gazette*). Besides magazine articles, he is author of *By-Ways of Nature and Life* (1884).

DEMISE' (OF. fem. of *demis*, from Lat. *demittere*, to hand down). In the most general sense, a transfer or conveyance of an interest in land. Technically the term is employed in two distinct senses: first, to denote a lease or letting of land for a term of years; second, to describe the transmission of the royal authority, dignity, and estates from one sovereign to his successor. The phrase "demise of the crown" does not signify the death of the sovereign, but the transfer or devolution of the kingdom, whether that occurs as the result of the death or of the voluntary abdication of the sovereign. Probably, however, it would be restricted to the case of a normal transfer of the crown in the succession established by law, and not to a change in the succession by revolution or otherwise. However this may be, the phrase "demise of the crown" is the legal expression of the notion involved in the popular phrase "The king never dies." It indicates that the government does not come to a full stop on the death or abdication of its head, but that the royal authority is continuous and permanent, passing at once, without a break or jar, to him who is to exercise it next. This conception of the matter, so important to the welfare of the kingdom and the stability of the government, is comparatively modern, the effect of the death of the sovereign in England having formerly been to paralyze for the time being many of the functions of government, including the administration of justice. The King's Peace had to be proclaimed anew by each sovereign at his accession, and the administration of government newly constituted. All these inconveniences have been remedied by a series of statutes enacted since the accession of William and Mary, and the principle of the immediate demise of the crown, as above described, firmly established. See Anson, *Law and Custom of the Constitution* (2d ed., Oxford, 1896).

DEMIURGE, dém'i-ürj or dé'mi- (Lat. *demurgus*, from Gk. *δημιουργός*, *dēmourgós*, handicraftsman, from *δημος*, *dēmos*, of the people + *εργον*, *ergon*, to work). The name given in the cosmogony of the Gnostics to the creator of the world of matter and sense. He was variously conceived. In general, he was the archon or chief of the lowest order of the spirits or eons of the pleroma, mingling with chaos, he formed in it a corporeal animated world. He created man, but could impart to him only his own weak principle, the *psyche*, or sensuous soul; therefore the highest, the really good God, added the divine rational soul or *pneuma*. But the power of evil in the material body prevented the development of that higher element. The demiurge, ignorant of the highest God, could not bring his creatures to the knowledge of the true Godhead; as the Jehovah of the Jews he gave them the imperfect law of Moses, which promised merely a sensuous happiness, and even that not attainable; so that another revelation

was necessary. Christian Gnosticism usually held Christ to be the bearer of that revelation, and the opponent of the claims of the demiurge upon men. See Gnosticism.

DEMMIN, də-mĕn' (formerly *Dymin*, *Demyn*, *Dammyn*, *Timin*, from OChurch Slav. *dymŭ*, smoke, Lat. *funus*, Skt. *dhūma*, vapor). A town of the Prussian Province of Pomerania, situated on the navigable Peene, 72 miles west-northwest of Stettin (Map. German Empire, E 2). Besides the town proper, Demmin comprises three suburbs. There are manufactures of machinery, woollens, hats, sugar, bricks, and leather. It has also distilleries and breweries, iron foundries, fisheries, and a large trade in lumber and grain. Pop., 1900, 12,085; 1905, 12,541, 1910, 12,378. Demmin, which had its origin in a Slavic settlement, was in the ninth century a place of some commercial importance. In 1164 it was taken by Henry the Lion, and in 1238 it became a member of the Hanseatic League. By the Peace of Westphalia it passed to Sweden, and in 1720 it came into the possession of Prussia.

DEMMIN, AUGUST (1823-98). A German-French art critic, born in Berlin. He went to Paris at the age of 17 to complete his education and made his home there until 1872, but traveled extensively throughout Europe and in Asia in pursuit of his studies, especially in the fields of ceramics and the science of arms. In 1873 he removed to Wiesbaden. The most important of his works is *Encyclopédie historique, archéologique, etc., des beaux-arts plastiques* (1872-80, 5 vols. with 6000 illustrations). He wrote also a series of manuals, both in German and French, designed to guide the amateur of the decorative arts, besides comedies, dramas, and novels.

DEMMLER, dēm'lr. GEORG ADOLF (1804-86). A German architect and politician. He was born at Güstrow, Mecklenburg, studied at the University and at the Academy of Architecture in Berlin, and in 1824 entered the government service of Mecklenburg. Appointed court architect in 1837, he planned the Grand Ducal Palace, the Court Theatre, and the Arsenal. Much interested in the welfare of the workmen, he introduced a system by which they shared directly in the profits of their labor. His political activity in 1848-50 led to his dismissal from the government service in 1851. He traveled for several years in Europe. He was one of the founders of the National Association (Nationalverein), in 1859, of the League for the Promotion of Peace and Liberty, and in 1868 joined the so-called German People's Party at Stuttgart. He was elected by the Social Democrats to the Reichstag in 1877, but did not seek reelection.

DEMOCÉDES (Gk. *Δημοκῆδης*, *Dēmokídēs*). One of the most famous of the early Greek physicians. He was born at Crotona, in lower Italy, about the middle of the sixth century B.C. After living at Ægina, Athens, and Samos, as official physician of the commonwealth, or of Polycrates (q.v.), retained at a high salary, he was taken prisoner by the Persians and carried to the Persian court, where he rendered important medical assistance to Darius I and his wife Atossa. Though honored by the Persians, he was desirous of returning to his native city; and, through the favor of Queen Atossa, he secured appointment to a secret mission which was sent to Greece. Escaping on this

expedition, he returned to Crotona. There he championed the aristocratic party and was obliged to flee to Platea. Consult Herodotus, iii, 129-138 (a narrative not in all respects historical).

DEMOCCHARES, də-mŏk'ā-réz (Lat., from Gk. *Δημοχάρης*). An Athenian orator and statesman, nephew of Demosthenes. He began his public career as leader of the anti-Macedonian party (322 B.C.) and, after the restoration of the democracy in Athens (307), became head of the patriotic party. He was exiled about 295, but returned in 287 or 286, after which he acted as Minister of Finance. He died after 280. Demochares left orations and an elaborate history of his time, only fragments of which remain; for these consult Müller, *Fragmenta Historicorum Græcorum*, ii, 445-449. Consult Christ-Schmid, *Geschichte der griechischen Literatur*, vol. i (5th ed., Munich, 1908).

DEMOCLES (Lat., from Gk. *Δημόκλης*, *Dēmoklēs*). An Attic orator of the school of Theophrastus, a contemporary and opponent of Demosthenes. He is known best as the defender of the children of the orator Lycurgus against the calumnies of Mirocles and Menæcæchmus. Though none of his works is extant, he probably left some written orations, since Dionysius of Halicarnassus ascribes to him an oration which had been attributed to Dinarchus. Dionysius and Suidas call him Democles.

DEMOCRACY (Gk. *δημοκρατία*, *demokratia*, government of the people, from *dēmos*, *dēmos*, the people + *kratēin*, *kratēin*, to rule). A term of wide and variable signification, comprehending such diverse but related conceptions as (1) a society based on equality, (2) a state in which the actual power of government is lodged in the mass of the people; and (3) a form of governmental organization in which the authority of the state is directly administered by the people or their chosen representatives. The term is also often employed indefinitely to describe all of these taken together, in which case it may be defined as a form of society in which the social organization, the energy of the state, and the powers of government are directed and controlled by the mass of the people, and sometimes more vaguely to characterize the tendency of the progressive nations during the last 200 years towards the realization of such a social and political organization. It is in the first, or social, sense that the term "democracy" is most frequently employed by continental and especially French writers, and in the third or governmental sense by the Greek philosophers, while among English and American political writers, from Bentham to Lecky and Woodrow Wilson, the tendency has been to limit its use to the actual exercise of political power by the people, and therefore as coextensive in meaning with popular government.

A democratic society is one in which privilege, whether based on birth, on wealth, or on public service, has been abolished, and a substantial equality of legal rights and obligations and of social and industrial opportunity established. The existence of a caste, whether hereditary or intellectual, or of social classes is incompatible with a democratic organization of society, which is likewise menaced by the growth of centralization of wealth on the one hand, and, on the other, by the existence of extreme poverty and the growth of dependent classes. It can therefore, under the present industrial system, be

only imperfectly realized in a state of civilization, its best illustrations being found in primitive or simple communities, like certain of the Swiss cantons and the frontier settlements in the western portions of the United States and Canada. Democracy as a social principle rests upon the doctrine of the essential equality of all men and of their equal worthiness—a notion derived mediately from the Christian conception of the equality of all men before God, but owing its translation from religion to society and politics chiefly to the influence exercised by the writings of Jean Jacques Rousseau. In the form which he gave to it, and in which it claims our allegiance, the doctrine and the practice of it are wholly modern. Certainly there was no social equality in the "estate of nature," in which Rousseau imagined himself to have found it, and the so-called democracies of the ancient world were anything but democratic in sentiment or in social structure. The triumph of the principle in the modern world has been checked by the unexpected persistence of the military spirit and the revival of militarism in Europe during the latter half of the nineteenth century, and by the wonderful industrial expansion of the same period, with the consequent increase and unequal distribution of wealth, in both Europe and America.

A government democratic or popular in form is a republic—i.e., a government in which the administration of the affairs of the state is committed to the people, to be exercised by them either directly in popular assemblies, like those of the Athenian democracy, or indirectly through representatives chosen by them, as in the republics of the modern world. Of this it may be observed, first, that the pure or direct form of democratic government, at which the criticisms of Greek political writers were directed, has never been completely realized and cannot be completely realized in practice. Certain of the functions of government must always be delegated. If the legislative power be exercised by the whole body of citizens, and the judicial power by large bodies of citizens chosen by lot or acting in turn, the executive power must always in fact be committed for longer or shorter periods to chosen representatives of the popular will. In the second place, even in this limited form, the direct form of democratic government is possible only in small and compact states, like the smaller Swiss cantons and the city states of antiquity; and even in these it has usually been found to be operative only on the undemocratic principle of rigidly limiting the number of citizens entitled to participate in the government. The town-meeting plan of government cannot be extended to the great aggregates of people which constitute modern states. In the third place, it is to be observed that, though the democratic state tends to act through republican forms, a representative republic is not necessarily democratic either in spirit or in its actual operation. A government republican in form may, like that of France, be essentially bureaucratic in structure and effect; or be, like that of the most of the Spanish-American states, a military tyranny; or be, like that of Mexico under Diaz, a virtual despotism. No one of these can properly be termed a democracy, though that designation would not be denied to England, which is a monarchy in form, or to Canada, which is a subordinate part of an empire. It would seem,

therefore, that the term "democracy" is not properly used to describe the external form of government, but rather a type of political society in which the essential power of the state is wielded by the mass of the people.

As thus understood, the true antithesis of democracy is not monarchy or oligarchy, but absolutism, i.e., dominion exercised over the mass of the people by an individual or a group of individuals, however constituted, not responsible to the people nor bound by law or custom to consult their wishes. Democracy, on the other hand, is popular government—government actually directed and controlled by the people, under whatever constitutional forms. The terms "monarchy," "oligarchy," and "republic" properly describe the form, and not the essential character of a government. A democracy may exist under any one of these forms. A limited monarchy, like that of England, under which the power of the state is actually exercised by the people through their chosen representatives, may be more truly democratic than a republic, like the recent government of the Transvaal, in which the actual power is wielded by a financial or political oligarchy, or like the Athenian Republic, in which it is restricted to a small minority of the male inhabitants of the state.

Attention has been called to the fact that democracy as a social principle is of modern origin. This explains the curious differences between the ancient and the modern conceptions of political democracy. The Aristotelian notion of democracy as a community of free citizens ruling the state, not being based on any conception of the essential equality of all men, was not offended by the existence in the state of a numerous laboring class, servile or free, and of a large resident alien population, which together outnumbered the political citizens 10 to 1, and which were equally excluded from participation in the government. The modern idea of a political democracy, on the other hand, being derived from the social conception of the equal worth of all members of the state, is satisfied with nothing less than the substantial participation of the great body of the people in the affairs of the state. It rests upon the theory that the people, whose welfare is the true end of government, are better judges of what will conduce to their welfare than is any individual or group of individuals likely to arise by any hereditary or self-selective process—a sound and salutary doctrine, which, however, in political experience runs too easily into the extreme form of the assertion that for public purposes one man's opinion is as good as that of any other man, and that all men are entitled to equal weight in political affairs.

It is to England more than to any other nation, even than the United States, that the modern world owes the realization of the democratic ideal in forms of political action. The two great revolutions—that which resulted in the creation of the Commonwealth, and that which finally expelled the Stuarts—were essentially popular in character. Though the Parliament was throughout that period, and until the reforms of 1832 and 1867, an aristocratic body, its responsiveness to public opinion and its steadfast resistance to royal pretensions made it the type of a popular representative assembly in Europe. Before the middle of the nineteenth

century every considerable European state, with the exception of Russia and Turkey, had adopted a constitution limiting the power of the crown and vesting a considerable share of political power in the people, and in most of them a representative legislature of the parliamentary or British type was adopted. But nowhere on the Continent, excepting in France, Switzerland, Norway, and Sweden, has popular government reached a high degree of efficiency or attained any considerable measure of success. Even in England the complete triumph of the democratic principle has been delayed, both in politics and society, by the persistence of the aristocratic tradition, which still preserves a considerable number of legal rights and privileges to a social class based on birth and inherited wealth, and which gives that class a preponderating influence in the political organization of the state.

Democracy in the United States is historically the offspring of the democratic forces in English political institutions. The radical wing of English republicanism and Whiggery in the seventeenth and eighteenth centuries dominated the settlement of the English Colonies in America and dictated their political development. The simplicity of Colonial life and the absence of any considerable representative of the English aristocratic classes promoted the orderly growth of a homogeneous democracy, which stood clearly revealed when the shock of separation from the mother country came. The speedy adoption of a written constitution, however, fixed the forms of American democracy and in so far tends to control the evolution of its ideals. The result is that in most forms of political action the United States is now less democratic than Great Britain. In spirit the English democracy is undoubtedly more conservative than that of the United States.

Since the opening of the new century there has been a marked revival of the democratic spirit in western Europe and America and the birth of that spirit in the older civilizations in which society had for centuries been unresponsive to its influence. The unrest which has recently characterized the teeming millions of India, the recent revolution in China and the Young Turkish movement in Turkey, as well as the widespread demand for woman suffrage in Europe and the United States, indicate that the movement is world-wide. The transformation, still in progress, of the Liberal party in Great Britain into a radical party, the rapid success of the so-called progressive movement in the United States, and the growth of Socialism and the Socialist party in western Europe and the United States are marked instances of its success. The demand for the direct nomination of candidates for public office, for the direct election of United States senators (secured by recent amendment to the Federal Constitution), and for such political safeguards as "the initiative," "the referendum," and "the recall," are further indications of its purpose and strength. In the social, as distinguished from the political, sphere the democratic movement of the time is finding forcible expression in the feminist movement and in various important legislative devices to improve the condition of the working classes and the poor. See CONSTITUTION; GOVERNMENT; REPUBLIC; FEMINISM; EQUAL SUFFRAGE; SOCIAL LEGISLATION; SOCIALISM.

Most of the philosophical authorities are hos-

tile critics of democratic government. For the ancient and mediæval view, consult Dunning, *History of Political Theories, Ancient and Mediæval* (New York, 1902); for the modern view, consult: De Toqueville, *Democracy in America* (1835); Motley, *Historic Progress of American Democracy* (1869); Freeman, *Comparative Politics* (London, 1873); Maine, *Popular Government* (ib., 1885); Bryce, *The American Commonwealth* (new ed., London and New York, 1910); Lecky, *Democracy and Liberty* (London, 1896); Burgess, *Political Science and Constitutional Law* (Boston, 1891); Wilson, *The State: Elements of Historical and Practical Politics* (ib., 1892); Ostrogorski, *Democracy and the Organization of Political Parties* (2 vols., New York, 1902).

DEMOCRATES (Lat., from Gk. Δημοκρατής, *Demokratēs*). An Attic orator who lived about 350 B.C., a contemporary of Demosthenes and an opponent of the Macedonian party. He accompanied Demosthenes to Philip to receive the latter's oath to the treaty with Athens and afterward assisted him in concluding a treaty against Philip with the Thebans. As an orator he was of only secondary importance.

DEMOCRATIC PARTY. The term "Democratic," as used in American party politics, was occasionally and loosely applied in the years 1789-92 to the group of Anti-Federalists (q.v.), and thereafter, in the last decade of the eighteenth century and the first two decades of the nineteenth, to the party then commonly known as the Republican. The vigorous adoption by these Anti-Federalist Republicans, especially during Washington's administration, of French principles and sympathies led to the application to them of the term "Democratic Republican," which remained in quite common usage for more than 30 years. This general attitude was one of opposition to all centralizing tendencies in the interpretation of the Federal Constitution. They wished the national government to remain weak, somewhat as it had been under the old Confederation; and they regarded the States as sovereign in an extreme sense of that word. (See STRICT CONSTRUCTIONISTS.) Upon the disappearance of the Federalist party (q.v.) there gradually appeared within the only party then active two groups, one of which became known as the National Republicans, and the other of which retained the old name of Democratic Republicans. The former developed into the Whig party (q.v.), while the latter was compactly organized as the Democratic party, which has since 1828 maintained an unbroken existence. This party, when thus organized by Jackson, adhered to the orthodox tenets of the old Anti-Federalists, the strict construction of the Constitution, and the limitation of the powers of the Federal government. As slavery, however, soon became the most vital question in national politics, and as the Democratic party was largely controlled by its Southern wing, it became finally the party of conservatism, in opposition to the new Republican party's progressive platform of free men and free soil. The two sectional wings of this party became naturally separated during the course of the Civil War, and the subsequent process of rehabilitation was so prolonged that the party was not again able to elect a president (leaving out of account the disputed election of 1876) until 1884, when entirely new issues were involved. In its later course the

party, in accordance with its old traditions, became particularly conspicuous as the advocate of tariff reform, and upon that platform its first post-bellum President, Grover Cleveland, was elected.

The founding of the present Democratic party, although in large measure due to the bitter fight between the followers of John Quincy Adams and those of Andrew Jackson, occurred in a decade during which were effected certain significant changes in the American political system. Thus, the practice, which had been hitherto uniformly observed, of having the presidential electors chosen by the State legislatures, was in some States abandoned, and thereafter the present method, by which the voters at large were given a share in the choice of the electors, was gradually introduced. Moreover, the old method of leaving the choice of presidential candidates to a caucus (q.v.) of the members of a party in Congress was vigorously attacked in 1824, with the result that after 1828 the people at large, through the medium of the national nominating conventions, had a direct share in the choice of candidates. Furthermore, in the same decade was felt for the first time the real significance of the political power of the new States beyond the Alleghenies; for, with the rise to power of the new Jacksonian democracy, there was given full sway to the principles of equality and of thorough democracy, which were best illustrated in the region of which Jackson was the natural product. In large measure the first conflict, in addition to being a largely personal one between the followers of Adams and those of Jackson, became a struggle between the old aristocracy of the East and the new democracy of the West, in which the latter, having almost won in the campaign of 1824, triumphed decisively in 1828, and brought to the presidency the man who in eight years was to transform a personal following into a dominating national party. Jackson brought under his leadership not only the friends of Calhoun and of W. H. Crawford, but also the strong forces of the Albany Regency (q.v.), under the lead of his Secretary of State, Martin Van Buren. Accordingly the Democratic convention—the first national convention of the party—which met at Baltimore, May 21, 1832, had little more to do than to name a candidate for the vice presidency, and in that step they followed the will of their leader and named Van Buren. This convention originated the so-called "two-thirds rule." The election which followed indicated clearly that Jackson's policy as to the tariff and as to the national bank had been approved, inasmuch as he received 219 electoral votes, while Henry Clay received only 49, Jackson carrying besides the Southern States, excepting Kentucky, the States of Maine, New Jersey, New Hampshire, and New York. The next convention of the party, that at Baltimore on May 20, 1835, was peculiar in having some 626 delegates, of whom 422 came from four States, Maryland, e.g., sending as delegates every member of the State Democratic convention. As was commonly expected, Van Buren was given the nomination, Richard M. Johnson, of Kentucky, being named for the vice presidency. The vote of the Whig candidate, William H. Harrison (q.v.), was increased to 73, while Van Buren's electoral vote fell to 170, a part of this Democratic weakening being accounted for by the

26 votes which were cast for Judge White, of Tennessee, and the 11 votes which were cast for Mangum by South Carolina. The whole responsibility for the failure of the financial policy of Jackson and Van Buren was placed upon the Democratic party, with the result that in 1840 General Harrison received 234 electoral votes and Van Buren received only 60. The Democratic convention of May 4, 1840, had been especially uncertain in its action because of a pronounced difference of opinions as to the claims of Vice President R. M. Johnson. The convention adopted, in a series of resolutions, what was substantially a "platform," expressing their view of the limited authority of the central government and of the impropriety of Federal laws establishing a national bank, providing for internal improvements, or fostering particular industries. The same platform, with additions, was adopted by the convention held at Baltimore on May 27, 1844, which pronounced for the reoccupation of Oregon and the annexation of Texas. For the first time in a convention of the party there was then a serious contest for the presidential nomination. Upon the first ballot Van Buren received a majority of the votes, and, although in the lead for four ballots, for the four subsequent ballots the leading candidate was General Cass, of Michigan; but on the ninth ballot the convention was "stampeded" for an inconspicuous candidate, possibly advanced to preserve harmony, James K. Polk, of Tennessee. George M. Dallas, of Pennsylvania, was nominated for the vice presidency, and this ticket received 170 electoral votes, as against 105 votes cast for Henry Clay. The failure of Van Buren to secure the party's nomination in 1844 and the choice by Polk of William L. Marcy (q.v.) of New York, as his Secretary of State, brought into prominence the factional controversy between the "Barnburners" (q.v.) and the "Hunkers" (q.v.) in New York. Both of these factions sent delegations to the convention of May 22, 1848, at Baltimore, and both delegations were admitted to seats, the vote of the State being divided equally between them. Neither delegation took thereafter any part in the convention, although the Hunkers and Marcy supported the administration and the party's nominee. On the fourth ballot Gen. Lewis Cass, of Michigan, was nominated for the presidency, and for the vice presidency Gen. William O. Butler, of Kentucky, was named, the convention also readopting substantially the platform of 1844. The seceding Barnburners held a State convention in June, in which delegates from four other States were present, and nominated Van Buren for the presidency, and in August they took part in the national convention of the Free Soil party at Buffalo, which nominated their leader for the presidency and Charles Francis Adams for the vice presidency. This combination of "Free-Soilers" and Barnburners effected such a division of the Democratic vote in New York that Taylor carried the State and secured in the aggregate 163 electoral votes, while Cass received 127. Between 1848 and 1852 political conditions were materially changed, particularly through the progress of events attending the Compromise Measures of 1850 (q.v.), and also through the effect upon the Whig party of the differences between the "Conscience" Whigs and the "Cotton" Whigs. At the Baltimore convention of June 1, 1852,

Cass, Buchanan, and Douglas were prominent candidates, but on the forty-ninth ballot Franklin Pierce, of New Hampshire, was named. William R. King, of Alabama, being nominated for the vice presidency. The platform was similar to that of 1848, with the addition of the "finality" plank, with an approval of the doctrines of the Virginia and Kentucky Resolutions (q.v.), and with a declaration of the justness of the war against Mexico. The Free-Soilers nominated John P. Hale (q.v.), of New Hampshire, while the Whigs, for what was the last campaign of the party, nominated Gen. Winfield Scott (q.v.), who received only 42 electoral votes, as against 254 cast for Pierce. In the convention of June 2, 1856, Pierce was again a candidate, being supported largely by Southern delegates, while the Northern delegates supported James Buchanan, of Pennsylvania, who was chosen on the seventeenth ballot, John C. Breckinridge being named for the vice presidency. The platform introduced a declaration in favor of insuring the ascendancy of the United States in the Gulf of Mexico and contained a declaration of the right of the Territorial governments of Kansas and Nebraska to allow slavery in those Territories. The convention of the American party nominated ex-President Fillmore, who received the eight electoral votes of Maryland, and the new Republican party (q.v.) nominated John C. Fremont (q.v.) who secured 114 electoral votes, while Buchanan was elected with 174 electoral votes. The year 1860 was disastrous to the organization of the Democratic party, inasmuch as it had become impossible to hold all factions of the party to the support of any one platform. Thus, the convention of the party, which met at Charleston, S. C., April 23, adopted resolutions which represented the middle view as to slavery rather than the distinctively Southern view, and thus led to the withdrawal from the convention of the solid delegations of Alabama, Mississippi, Florida, and Texas, as well as of many delegates from Georgia, Louisiana, South Carolina, North Carolina, Arkansas, and Delaware. The portion of the convention remaining in session adopted a resolution that a vote equal to two-thirds of a full convention should be necessary for a nomination, and after several days of ineffectual balloting, in which Stephen A. Douglas (q.v.) was easily in the lead, adjourned to meet at Baltimore on June 10. At that time the places of the Charleston seceders were filled so uniformly with followers of Douglas that a new secession took place, under the lead of some of the Virginia delegates, whose example was followed by most of the delegates from the other Southern States. Finally, the delegates still remaining virtually rescinded the two-thirds rule and declared Douglas to be their nominee for the presidency. Herschel V. Johnson, of Georgia, was nominated for the vice presidency. The delegates who had withdrawn from the Baltimore convention, representing in some manner 21 States, proceeded to nominate for the presidency John C. Breckinridge, of Kentucky, and for the vice presidency Joseph Lane, of Oregon. These nominations, furthermore, were adopted by those who had seceded at Charleston and had later met in convention at Richmond. In the following election the combined popular vote of Douglas and Breckinridge exceeded the popular vote of Lincoln by more than 350,000,

although the electoral vote of Lincoln was 180, while that of Breckinridge was 72, and that of Douglas only 12. Douglas secured the whole electoral vote of Missouri and three votes from New Jersey. The Constitutional Union party (q.v.) carried Virginia, Kentucky, and Tennessee, and the rest of the South went solidly for Breckinridge. The strength of the Democratic party was thus plainly in the South, and the effect of the war was naturally to remove the party, for the time being, from its position as a factor in national politics. Even in 1868 three Southern States were still in such relation to the national government as to lose their electoral votes entirely. In the campaign of 1864 General McClellan (q.v.), standing as a candidate in the North on a platform which declared the war was a failure, secured only 21 electoral votes as against the 212 given to Lincoln. The party having taken an attitude of criticizing both the conduct of the war and its results, its defeat was assured by the Republican nomination in 1868 of General Grant, who received 214 electoral votes, while his opponent, Horatio Seymour, received only 80, of which 33 were from his own State of New York. The in-trenchment of the Republicans in power was emphasized in the following campaign, when Grant's vote rose to 280, while for his Democratic opponents (the regular Democratic candidate, Horace Greeley, having died before the casting of the electoral votes) were cast only 63 votes. The character of the Republican administration and the vigorous attacks upon it (see *CREDIT MOULIER*) made possible the return to effective activity of the Democrats, particularly as they had an especially strong leader who, as the reform Governor of New York and as the successful opponent of Tweed (q.v.), had become the most conspicuous Democrat of his day. The energetic campaign of 1876, however, while seeming to give Tilden substantial success, resulted in the election of Hayes, through the intervention of the Electoral Commission (q.v.). In the matter of popular vote the following election was equally favorable to the Democrats, the vote of Garfield exceeding that of Hancock by fewer than 1000. Garfield, however, received 214 electoral votes, while Hancock received only 155. In the ensuing campaign the Democrats were able to take advantage of the factional conditions within the Republican party, and this advantage was greatly increased, on the one hand, by the Republican nomination of James G. Blaine and the immediate development of the so-called Mugwump opposition to him (see *MUGWUMP*), and, on the other hand, by the Democratic nomination of the reform Governor of New York, Grover Cleveland. A revolt against the alleged Republican corruption, and other unusual elements, combined to bring about, for the first time since the war, the election of a Democratic president: although in 1888 Cleveland himself was defeated by Benjamin Harrison, only to be even more strikingly successful in 1892, receiving 277 votes to the 145 given to Harrison. The plank of tariff reform had thus within a decade carried the party through two successful campaigns, but the greatly increased power of the protectionists (see *TARIFF*) made doubtful any further success in that line by the Democrats, while at the same time a faction in the party forced to the front a new issue, seemingly a sectional issue, and, having se-

cured control of the convention of 1896, introduced the "free silver" plank into the platform and nominated William J. Bryan. In spite, however, of the aid given to the Democrats by the Populists (q.v.), the principles of the gold standard and a high tariff were indorsed in the election of William McKinley (q.v.). Four years later the Democratic party once more nominated Mr. Bryan. President McKinley received 292 electoral votes as against 155 cast for Mr. Bryan. The defeat had the effect of lessening the influence within the party of the silver and Populistic faction, so that in 1904 the party's candidate was Alton B. Parker, of New York, a conservative Democrat. He received 140 electoral votes as against 336 cast for Mr. Roosevelt. In the campaign of 1908 William H. Taft defeated Mr. Bryan, who had easily secured the nomination of the Democratic party in a convention held in Denver July 7. In the election Taft received 321 votes, and Bryan 162. In the campaign of 1912 Taft was again nominated by the Republican party. Roosevelt was the nominee of the new Progressive party in a national convention held at Chicago August 5. In an exciting convention held at Baltimore, June 25, Woodrow Wilson, Governor of New Jersey, was nominated by the Democratic party after several days' balloting, his chief rivals being Clark of Missouri, Underwood of Alabama, and Harmon of Ohio. The nomination of Wilson was due to Mr. Bryan. The Democrats declared for a tariff for revenue only, for the popular election of United States senators, for a Federal income tax, and for the nomination of candidates in primaries. In the election which ensued Wilson received 435 votes, Roosevelt 88, and Taft 8.

Consult: Gillet, *Democracy in the United States* (New York, 1868); Van Buren, *Political Parties in the United States* (ib., 1867); Johnston, *American Politics* (last ed., ib., 1902); Ostrogorski, *Democracy and the Organization of Political Parties* (ib., 1902); Woodburn, *Political Parties and Party Problems in the United States* (ib., 1903).

DEMOCRITUS (Gk. Δημόκριτος, *Dēmokritos*). An illustrious Greek philosopher, often popularly spoken of in both ancient and modern times as "the Laughing Philosopher," just as Heraclitus was styled "the Weeping Philosopher." He was born at Abdera, in Thrace, about 470 or 460 B.C. Of his life little is known. The statement that he was first inspired with a desire for philosophic knowledge by certain Magi and Chaldeans whom Xerxes had left at Abdera, on his Grecian expedition, is as untrustworthy as that which represents him as continually laughing at the follies of mankind. His extensive travels, however, through a great portion of the East (he lived in Egypt seven years) prove his zeal for knowledge, as does also his ceaseless industry in collecting the works of other philosophers. Democritus was by far the most learned thinker of his age. He had also a high reputation for moral worth and appears to have left a strong impression of his disinterestedness, modesty, and simplicity on the mind of the community, for even Timon the Scoffer, who spared no one else, praised him. The period of his death is uncertain. He lived, however, to a great age. Of the 72 works which, according to Diogenes Laertius (q.v.), he wrote on physics, mathematics, ethics, and grammar, only a few fragments are extant. These have been collected by Mullah (Berlin, 1843; 1860). Con-

sult also Ritter and Preller, *Historia Philosophiae Graecae* (9th ed., Gotha, 1913).

Democritus' system of philosophy is known as the atomic system. Its essence consists in the attempt to explain the different phenomena of nature, not—as the earlier Ionic philosophers had done—by maintaining that the original characteristics of matter were qualitative, but that they were quantitative. He assumes, therefore, as the ultimate elementary ground of nature, an infinite multitude of indivisible corporeal particles, atoms, and attributes to these a primary motion derived from no higher principle, existing from eternity to eternity. This motion brings the atoms into contact with each other, and from the multitudinous combinations that they form springs that vast and varying aggregate called Nature, which is presented to our eyes. Besides the atoms (matter) there is void; without void motion (and so life) would be impossible. Democritus did not acknowledge the presence of design in nature, but he admitted that of law. He believed strictly in secondary or physical causes, but not in a primary immaterial cause. With the aid of law all the phenomena of the world can be accounted for; there is no need, no room, for divine providence. Life, consciousness, thought, were, according to him, derived from the finest atoms; those images of the sensuous phenomena surrounding us which we call mental representations were to him only material impressions, caused by the more delicate atoms streaming through the pores of our organs. Democritus boldly applied his theory to the gods themselves, whom he affirmed to be aggregates of atoms, only mightier and more powerful than men. The ethics of Democritus set happiness as the aim, and by this he understood serenity of mind, undisturbed by fear or passions; hence temperance, uprightness, and noble actions are to be cultivated. The physical philosophy of Democritus, itself derived, in part at least, from that of Leucippus, was made the base of the system of Epicurus, who reared upon it a structure of ethical doctrine. See EPICURUS; LEUCIPPUS; LUCRETIUS. Consult: Zeller, *Philosophie der Griechen*, vol. i (Leipzig, 1892); Gomperz, *Greek Thinkers*, vol. i (Eng. trans. by Magnus, New York, 1905); Beare, *Greek Theories of Elementary Cognition* (Oxford, 1906); Hicks, *Stoic and Epicurean* (New York, 1910).

DEMODOCUS (Gk. Δημόδοκος, *Dēmódokos*). The bard at the court of the Phaeacian King Alcinous, who entertained Odysseus after his shipwreck. His songs are described in books vii and viii of the *Odyssey*.

DEMOGEOT, de-mô'zhô', JACQUES CLAUDE (1808-94). A French author, born in Paris. He taught literature in the colleges at Beauvais, Rennes, and Lyons, became professor of rhetoric at the Lycée Saint-Louis in Paris in 1843, and finally was appointed to a chair in the faculté des lettres at the Sorbonne. His most important work is the *Histoire de la littérature française depuis ses origines jusqu'à nos jours* (1851; 26th ed., 1899), held in great esteem in the literary world. He published further: *Étude sur Pline le Jeune* (1845-50); *Les lettres et l'homme de lettres au XIX^{ème} siècle* (1856); *La critique et les critiques en France au XIX^{ème} siècle* (1857); *Tableau de la littérature française au XVIII^{ème} siècle* (1859); *Contes et causeries en vers* (1862); *Histoire des littéra-*

tures étrangères considérées dans leurs rapports avec le développement de la littérature française (3 vols., 1880-83); Francesca da Rimini (1882).

DEMOGORGON (Gk. *δαίμων*, *daimôn*, demon + *γόργος*, *gorgos*, horrible). A mysterious being whose name first appears in some manuscripts of the commentary of Lactantius (or Luctatius) Placidus to the Thebais of Statius, iv, 516, as the name of the mighty being whom all the powers of the lower world obey (Luctatius wrote about 450 A.D.). Other manuscripts show varying forms, and it is very probable that we have to do with a copyist's corruption of the Greek *δημιουργός*, *dēmiourgos*. Mythological writers of the Renaissance, especially Boccaccio, took up the word as the name of a supreme power, and thence it passed into the works of Ariosto and other poets. Demogorgon is mentioned by Spenser and Milton; in Shelley's *Prometheus Unbound* he is introduced as the mighty power which overthrows Jove. Even if the form of the name is correct, there is no reason to suppose that name or being was known to any classical writer.

DEMOGRAPHY (Fr. *démographie*, from Gk. *δημος*, *dēmos*, country, people + *γραφειν*, *graphein*, to write, describe). A branch of the science of statistics. In its narrower sense it deals exclusively with vital statistics, the statistics of population. In its broader sense it has been defined as "the science of statistics applied to questions concerning the social well-being of the people," and it has been considered as synonymous with statistics. The term was first used by Achille Guillard in his *Éléments de statistique humaine ou démographie comparée* (Paris, 1855), and since then it has been adopted in all countries, although it has not been accepted by all statisticians. Demographic statistics are so closely associated with anthropology that demography has been called a branch of anthropology. They are also of special importance for sociology.

Statistics of population are fundamental. In general they measure the growth and decay of population, the normal and abnormal conditions, the working of great social influences, and the pressure of antisocial forces in the community. In a more detailed form demographic data may include the following: 1. The composition of the population; the numbers, density, sex, age, parentage, defective classes, physical condition in relation to disease and epidemics, and manner of grouping from point of view of race, occupation, or civil position. 2. Changes in population, as expressed in births, marriages, and deaths. 3. Migrations and their effects, both individual and local, and their relation to economic conditions. 4. Morality, with statistics of crime, illegitimacy, and suicide. 5. Degrees of education. 6. Economic and social statistics, especially relating to insurance. In drawing conclusions from these statistics an important theoretical topic is their application to the doctrines of Malthus.

Demography is recognized as a cognate subject to hygiene, and since 1887 the International Congress of Hygiene and Demography has held annual meetings, one of which, 1912, was held in Washington, the others in various European cities. Demographic material is found in all national-bureau reports on population. In the United States the word is less widely used and in its narrow sense. For instance, Professor Mayo-Smith divides population for the study of

social organization into demographic, social, and ethnographic classes, and includes in the first only the individuals who are distinguished by differences in sex, age, conjugal condition, and physical health. The American Statistical Association also publishes much demographic material without so distinguishing it. Consult Mayo-Smith, *Statistics and Sociology* (New York, 1895), and Levasseur, "History of Demography," in *Report of International Congress of Hygiene and Demography*, vol. i (Budapest, 1894). See STATISTICS.

DEMOISELLE, de-mwā'zēl'. A fish of the family Pomacentridæ. These fishes are remarkable for their graceful form and brilliant colors and abound in tropical seas, haunting the coral reefs and feeding upon corals and other small creatures, much after the manner of coral fishes. A characteristically brilliant species is pictured on the Colored Plate of PHILIPPINE FISHES.

DE MOIVRE, de-mwā'vr', ABRAHAM (1667-1754). A distinguished French mathematician. He was born at Vitry, Champagne, but spent the greater part of his life in England, whither he fled in 1688, with many others, after the revocation of the Edict of Nantes (1685). He supported himself by private tutoring and public lecturing and, towards the end of his life, by solving problems in chance, play, and annuities. He was a fellow of the Royal Society of London and a member of the Berlin and Paris academies. The *Philosophical Transactions* of London contain many of his contributions. He was so esteemed by the Royal Society that he was chosen to decide the famous contest between Newton and Leibnitz concerning the invention of the calculus. De Moivre's researches, with those of Lambert, created the part of trigonometry (q.v.) which deals with the imaginary quantities, and he contributed much to the advancement of the theory of numbers and of probability. Among his published works are: *Miscellanea Analytica de Seriebus et Quadraturis* (1730); *Doctrine of Chances* (1st ed., 1718; 2d ed., 1738); *Annuities upon Lives* (1725, and several subsequent editions). The well-known theorem which bears his name is connected with complex numbers (q.v.). It may be stated symbolically as follows: $(\cos \phi + i \sin \phi)^n = \cos n\phi + i \sin n\phi$.

DEMOLITION, dēm'ō-līsh'ŏn (Fr. *démolition*, Lat. *demolitio*, from *demoliri*, to pull down, from *de*, down + *moliri*, to build). The scientific destruction of works or property. In modern warfare the destruction of material is often deemed by military commanders to be essential to the success of their operations. The material destroyed on various occasions has included every kind which might be of use to an army acting either on the offensive or the defensive. The motive for demolition by troops has likewise varied from the necessity of removing an obstacle in the way of their own operations, to the advantage of embarrassing an enemy by destroying or disabling some structure that might be useful to him. In some cases, as in the famous raid through the Shenandoah valley, Va., practically everything which it was thought might contribute to the success, directly or indirectly, of the Confederate army was destroyed by General Sheridan with a view of rendering it impracticable for the Confederate army to operate in the valley as it had been doing. At the other extreme lies the destruction of a single piece of material which acted as

a barrier to the progress of an army. A typical instance of this kind was the destruction of a door during the hostilities in China. The Japanese troops were delayed at one of the gates, or doors, the approaches to which were well covered by the fire of the Chinese. A Japanese corporal undertook to effect the demolition of the gate by an explosion. After he had placed the charge, ignited a fuse, and withdrawn from its immediate vicinity, the flame was extinguished by the Chinese. This operation having been repeated several times, he finally drew his sword after lighting the fuse and stood over the explosive, permitting himself to be killed by the explosion which broke in the gate.

The exercise of good judgment is enjoined upon the officer in charge of demolitions. He should carry the destruction as far as is necessary to aid the general military project of which his work is a part; but he should not knowingly go further. The demolition of material which may subsequently be of service to the friendly army should only be undertaken with great caution. The denial of its use to the hostile army may frequently be accomplished in some other way. For example, a blockhouse or other purely military structure about to be abandoned and likely to be of considerable value to the enemy's forces should be unhesitatingly razed to the ground. While a bridge, building, railroad, or telegraph line which is useful for nonmilitary as well as military purposes should, if practicable, be crippled only sufficiently to prevent its temporary use by the enemy. Its rehabilitation will thereby be simplified, whether for later use by the friendly army or for civil purposes.

The principal agents used in demolitions are fire, explosives, and tools. Where time allows and the material to be destroyed is inflammable, as in the case of food supplies, crops, frame buildings, wooden bridges, etc., it is burned if the flame and smoke will not be objectionably conspicuous. In other cases the demolition is effected by the use of explosives, assisted sometimes by the pick, axe, and other tools.

The materials most frequently to be demolished are guns, railroads, including their bridges and tunnels, walls, doors, telegraph and telephone lines. A large gun is most readily destroyed by removing the breechblock and exploding a charge on the chase or in the bore. A railroad may be put out of commission by destroying its rolling stock or its track. Wooden cars are easily destroyed by burning. Locomotives and other machinery can be quickly disabled by removing or destroying some vital part. A locomotive can be more seriously disabled by building a fire in the empty boiler or by setting off a charge of explosive in the boiler or near some other large vital part. Railroads have been destroyed by overturning sections of the track, removing and burning the ties; the rails placed on piles of burning ties, heated in the centre, and then bent and twisted. If simply bent, it is a comparatively simple matter to straighten them. If, however, they are well twisted, the rails must be re-rolled before they can be used again. A tunnel which is a critical point of a railroad line may be put out of commission for some time by a collision and wreck therein. If it is desired to quickly and temporarily disable a road in such a way as to leave the same material available for its rehabilitation in the near future, it may ordinarily be done by overturning the track on fills and throwing it down the sides

of the embankment. Walls and doors may be broken down with picks and crowbars, or can be demolished by exploding charges against them.

The explosives ordinarily used for demolitions are gunpowder, dynamite, and guncotton. Experiments are in progress in various military countries to develop explosives still more suitable for such use. If gunpowder be used, it is necessary to tamp the charge. If guncotton, tamping is not essential. The rules governing the amount of explosive to be used are only approximate and must be considered in connection with the class of material to be destroyed. In general the amount of explosive force varies with the square of the thickness of the wall or pier to be demolished; and directly, as its length. For example, a brick wall 2 feet thick requires about two pounds per running foot of guncotton, while one 4 feet thick will require about eight pounds per running foot.

If in haste, the walls of a house may be blown down by the explosion of one or more charges of 50 pounds of dynamite in a central position. A tree 13 inches in diameter may be cut off by boring two radial holes, inserting a half-pound stick of 50 per cent dynamite in each, tamping behind the sticks with clay, and exploding the charge electrically. If the charges must be exploded with time fuses, one hole should be loaded and fired; and a second hole bored in the soundest part of the tree remaining and treated similarly. A steel rail can be cut by the explosion of three-fourths of a pound of guncotton against its web. The destruction of bridges requires judgment in the placing of the charge. In a wooden bridge the destruction can be accomplished by building a fire under one or more pieces, whose failure will cause the entire bridge to drop. Similarly, an iron or steel truss bridge may be destroyed by cutting simultaneously with explosives the lower chord of some tension member, usually near the abutments of the bridge, where the cross section is smallest. A pound and a half of dynamite is required per running foot for steel plate $\frac{3}{4}$ of an inch thick. Charges for cutting steel must be placed on the surface and extend completely across the member to be cut. Where practicable, they should be tamped. Tamping is facilitated by placing the charges at crossings or intersections of members. Arched masonry bridges and tunnels can best be destroyed by exploding the proper-sized charge on the top side of the arch near the haunches. When impracticable to reach the top side of the arch, the destruction may be effected by propping a large charge against the crown of the arch.

The method of destroying such purely military obstacles as abatis, trous-de-loup, palisades, barricades, will usually be simple and evident, but may be as varied as the variations in construction. It will usually include the refilling of places excavated below the general level of the ground and the tearing down or burning of structures above the ground surface. Wire entanglements placed as obstacles to the advance of the troops may be rendered ineffective by cutting with wire nippers, axes, or other edged tools. Telegraph and telephone lines can be destroyed by cutting down and burning the poles; the wires should be removed and twisted or buried. A telegraph line may be temporarily disabled by removing some instruments or establishing faults, crosses, and grounds in the line.

The explosives, tools, and fuses for military

demolitions are variously carried in small packages in the saddlebags of mounted troops and in larger quantities on pack mules and wagons in charge of engineer troops.

DEMON (Lat., from Gk. *Δαίμων*). A Greek writer who lived about 280 B.C. He is the author of *Atthis* ('*Ardis*'), a lengthy history of Attica, and of works *Περὶ Παρομιῶν*, *On Proverbs*, and *Περὶ Θνῶν*, *On Sacrifices*. The extant fragments of his writings are collected in Müller, *Fragmenta Historicorum Græcorum*, vol. i (Paris, 1868).

DEMON (Gk. *δαίμων*, *daimôn*, from *δαίωσθαι*, *daïousthai*, to divide, to apportion). In popular usage, an evil spirit or fiend, but in allusions to the classics a tutelary deity or a godling. The development of the demon concept is an interesting one. In Hesiod the souls of the departed are called demons, and Æschylus in the *Persians* makes Atossa apply the term to her deified husband, Darius. Herein seems to lie the original meaning of the word. The *daimon* is one of the many spiritual beings that determine the fate, good or bad, of individual human beings. Denoting at first the ghosts of the benignant dead who, when duly propitiated, confer boons on those who observe their cult, and later deities in a vague sense, they become in Homer immortal gods, because responsible for the decrees of fate. Then the concept entered by the time of Socrates and Plato upon its meaning of guardian spirit. In this sense Socrates called his indwelling genius *δαμόνιον*, and he fancied that it spoke within him to restrain him, but never to impel him. The sense of the word which is the most common one is a late Jewish and Christian development. Through Oriental influence there gradually arose a realistic doctrine of demons as good and evil spirits and as mediators between God and men. In the Greek version of the Old Testament the words indicating the gods of the nations are often translated as demons. This paved the way for the peculiar use among the Christians. In the New Testament, therefore, demon always has a bad sense. The spread of Christianity carried the use of the word with it, and demon thus became a synonym of devil, fiend, and maleficent spirit in general. See DEMONOLOGY. Consult Van der Veen, "De demonologie van het Judaïsme," in *Theologische Studien*, pp. 301 ff. (1890), and Baljon, article *δαίμων*, in *Grieksch-theologisch Woordenboek* (Utrecht, 1895).

DEMONAX (Lat., from Gk. *Δημόναξ*). A Cynic philosopher of Athens in the second century A.D. His character has been extolled by Lucian, and he seems to have been a benignant sort of person, quite as much Socratic as Cynic. Consult Fritzsche, *De Fragmentis Demonactis* (Rostock, 1866), and Bernays, *Lucian und die Kyniker* (Berlin, 1879).

DEMONETIZATION. See BIMETALLISM.

DEMONIAC (Lat. *demoniacus*, Gk. *δαμονικός*, *daimonikos*, from *δαίμων*, *daimôn*, demon). A person supposed to be possessed by a demon. The idea of such a possession is as widespread as the belief in the existence of demons. There is evidence of it in the ancient civilizations of Egypt and Babylonia; it existed in Persia and Judæa, Greece and Rome, in the most flourishing periods of their history; it held a large place in the life of the Christian nations until the end of the eighteenth century; it is cherished by the mass of the people in India and China and is found among numerous savage tribes.

This conception has offered itself as the natural explanation of certain extraordinary and startling phenomena. The frenzy of the prophet and the dervish, the Pythoness and the Bacchant, the necromancer and the witch, could only be understood in earlier times as the obsession of a spirit, the temporary possession of a human being by a ghost. A frequent occurrence of such an unusual phenomenon would naturally give rise to the belief in a permanent possession, an incarnation of a god, a transmigration of an eminent ancestral spirit into the body of a descendant. As the divine frenzy was frequently connected with hysteria and epilepsy and seemed akin to insanity, these pathological conditions were naturally ascribed to the same agencies. Physical disabilities of long duration and apparently incurable, such as deafness, dumbness, and blindness, would also be accounted for in the same way and ultimately all bodily diseases. As in course of time the demons were differentiated as evil spirits in distinction from the good spirits, gods, angels, saints (see DEMON), persons possessed by them were thought to secure from such impure sources forbidden knowledge, heretical doctrines, unholy enthusiasm, suffering and misfortune, or a singular immunity from want and disease in exchange for everlasting perdition.

Although a belief in demoniacal possession must have grown up spontaneously among different peoples from the need of explaining such abnormal and striking phenomena found everywhere, historic contact no doubt hastened the process of development and gave shape to latent tendencies. The highly specialized demonology providing a spirit for each important organ of the body and for every familiar disease, which meets us at the very dawn of history in Egypt and Babylonia, has, directly or indirectly, influenced all nations of western Asia and Europe. Thus, in Iran, Zoroastrianism, by reciting the prayer called *Ahuna-vairya*, "caused all demons to vanish in the ground who aforesaid flew about the earth in human shape" (Yasna, ix, 15). Already in Homer (*Odyssey*, v. 396) a demon causes wasting sickness: insanity and epilepsy, as well as the divine frenzy of the Bacchantes, are ascribed to demons by later writers. But there is every reason to believe that the increasing emphasis on the wickedness of the demons was occasioned by conflict with Persia on the one hand and Egypt on the other. How strong the native conception was is seen from the fact that even the Neo-Pythagoreans and Neo-Platonists did not limit the term to an evil spirit, as was done in Persia and Judæa. Possession by a spirit must have been a very familiar conception among the ancient Hebrews. Without it necromancy and witchcraft could not have flourished, and prophethood would have been impossible. The high moral ideals of the prophets whose words have come down to us cannot obscure the fact that they both considered themselves possessed by a spirit, whose spokesman they became by virtue of this possession, and also regarded other prophets as possessed in a similar manner by other spirits. The immunity with which they could make personal attacks upon kings, magistrates, and priests was undoubtedly due, in no small measure, to the general fear of the spirit that possessed them. The capacity for prophetic visions or conditions seems to have been connected with a certain epileptic or cataleptic tendency. The

prophet was looked upon as a madman; the insane man was possessed by a spirit. David was perfectly safe when feigning madness (1 Sam. xxi. 13); his lament over Saul shows that he did not associate with the King his deeds in moments of insanity (2 Sam. i. 17-27). In the same way the frenzy exhibited in battle was looked upon as possession. The spirit was said to clothe himself with a man. While we have no positive evidence that disease was explained by spirit possession, the prophetic character of the literary remains in part accounts for the silence. As leprosy and pestilence were considered as the result of blows inflicted by Yahwe or some other god, coming unawares and smiting, so other sicknesses may have been traced to purely external attacks of such spirits as the Seirim or the Shedim. The growth of monolatry and transcendental theism forced the transfer of certain functions of deity to intermediaries. Then it was that contact with Persian, Egyptian, and Græco-Macedonian thought helped to develop the idea of demoniac possession so manifest in the Synoptic Gospels and the Talmudic literature. It has been observed that in no Gospel are all diseases referred to demoniac possession, and that Mark confines possession to psychical maladies such as insanity and epilepsy, while Matthew and Luke add instances of purely bodily diseases. The selection of Mark may be connected with the great importance that his Gospel attaches to the superhuman insight possessed by the demons, and it can scarcely be asserted with safety that he drew a sharp distinction between psychical and physical disease, or that he differed from the other Synoptists in regard to the cause of ordinary maladies. Some scholars have maintained that Jesus did not really believe in demoniac possession, but only accommodated himself to the current belief. This is a highly improbable view; and the discussion recorded in Matt. xii. 22 et seq. seems to be decisive against it. Here Jesus assumes that members of the Pharisaic party are able to cast out demons, but points to his own extraordinary success as a sign that the kingdom of heaven is coming and attributes his own work to a spirit working through him that must not be blasphemed. That exorcists formed a recognized profession among the Jews of the period may also be inferred from Talmudic literature, in which demoniacal possession and the possibility of expelling the demons are in numerous places accepted as facts.

Among the Celtic, Germanic, and Slavic nations there were many higher or lower nature spirits to whose influence various distempers were attributed, and, though it cannot be definitely proved, there is reason to suppose that possession was not unfamiliar to them. But their conversion to Christianity made them at once acquainted with New Testament demonology and with an ecclesiastical organization that recognized exorcists as a clerical order. (See EXORCIST.) Persons who contrived to worship in secret the ancestral gods, even after they had been officially declared to be demons by the Church, were regarded as possessed. This would be especially the case with old women who adhered most persistently to the ancient cults. Since obstinate clinging to wrong beliefs could only be accounted for by demoniac influence, heretics were also regarded as bewitched. In its battle with the demons the Church never struck a heavier blow than when Innocent VIII (q.v.),

on Dec. 5, 1484, sent out his bull *Ad futuram rei memoriam*. The methods of carrying out its recommendations were set forth with brutal frankness in the *Malleus Maleficarum*, written by his chief inquisitor, Jacob Sprenger. It has been estimated that a vast number of lives were destroyed as a result of these methods of dealing with demoniacal possession. As Luther and other leading reformers continued to cherish the belief, it maintained its hold upon the Protestant churches and was responsible for much persecution, until, undermined by the attacks of deists and rationalists, it gradually disappeared before the progress of modern science. Consult: Semler, *De Demoniis* (Halle, 1760); Stübe, *Jüdisch-babylonische Zaubertexte* (ib., 1895); Nevius, *Demon Possession* (Chicago, 1895); Maspero, *Dawn of Civilization* (Eng. trans., New York, 1894); Alexander, *Demoniac Possession in the New Testament* (Edinburgh, 1901); Townsend, *Satan and Demons* (Cincinnati, 1902); Duhm, *Die bösen Geister in Alten Testament* (1904); Lagrange, *Études sur les religions sémitiques* (1905); Marti, *Religion des Alten Testament* (1907); Henry Preserved Smith, *The Religion of Israel* (1914).

DEMONOLOGY. The branch of comparative theology which concerns itself with beliefs regarding evil spirits or demons. The worship of demons is one of the most widespread of all religious phenomena. Besides the beneficent godlings or ghosts, there exists a far greater number of maleficent beings who are either divinities or supernaturalized spirits. While the beneficent deities may, and often do, receive expressions of gratitude for past bounties and prayers for continued blessings in the future from their worshippers, it is the demon or maleficent godling or ghost who receives the greater amount of human tribute. The reason for this religious attitude in primitive society is not far to seek. The beneficent deity is, in the eyes of early man, an easy-going being who dispenses blessings as a matter of course, and he may therefore be trusted to continue on in his routine goodness. An occasional sacrifice as a token of gratitude or as an inducement to confer greater boons, or to recommence an interrupted course of beneficence, is quite sufficient for him. His blessings may even be overlooked in view of their quiet and orderly action, or be forgotten altogether on account of the number of painful events which befall man. With the demon things are altogether different. His power, which he constantly exerts for harmful ends, must be met with continued propitiation, in the shape of prayer or sacrifice. Furthermore, the malignancy of the demon cannot be overlooked and is far more prominent to the primitive mind than beneficence, which, as already suggested, frequently passes unnoticed. The worship of demons is in general directly proportionate to the low character of the cult. As religion develops in any community or tribe, the demon's scope of malignancy is circumscribed accordingly, while the degree of worship paid to beneficent ghosts and gods constantly increases.

Demons comprise several classes and occur in a vast variety of forms. The two main divisions are, as in the case of beneficent divinities, either superhuman, being personifications of the powers of nature, or what may be termed posthuman, being ghosts of dead ancestors, especially of the chiefs, or of men who had been otherwise con-

spicuous in the community during life. These two classes of superhuman and posthuman godlings and demons frequently overlap, and the dividing line between them must be regarded as a shifting boundary. Here in many cases syncretism, or the blending of divinities originally distinct into one, may be the source of confusion. In such a divinity as the Greek Apollo, e.g., might be syncretized a beneficent godling of light, a ghost of some early member of a tribe conspicuous for musical ability, and the maleficent godling of light, who causes death and damage as in sunstroke. It is, in consequence, sometimes hard to tell to which division a given godling or demon belongs. Such an uncertainty is not in itself a proof of error of method. It is probably incorrect to assume an excessively nice discrimination in this regard among primitive mankind, although there is a marked tendency to elevate posthuman into superhuman divinities either beneficent or maleficent, while the change of nature deities into ghosts is practically unknown. On the other hand, the attempt to reduce all gods and demons to the single category either of nature deities or of ghosts seems an unscientific one in its fundamental principle. There may even be other factors in the origin of belief in divinities, and it is an error to assume that the primitive is necessarily simple. Furthermore, the functions of the beneficent and maleficent deities, like the classification of superhuman and posthuman, are frequently fused. Thus the fire godling may be beneficent, as in the hearth fire, or maleficent, as in the conflagration of a village. Again, a malignant deity may, by proper sacrifices and ritual, become benignant to an individual or tribe, as in an invocation to smallpox to befall one's enemies.

The Semites furnish an admirable example of the course of development of demonology. In the earliest records of Babylonia and Assyria the antithesis between beneficent and maleficent deities is clearly marked. The conflict in the Babylonian creation myth of Marduk, the god of light, with Tiamat, the demon of darkness, a conflict which is indicated by Gen. i. 2-8, and more clearly in Rev. xii. 7-9, is an instance of enmity between two nature godlings. On the other hand, Lilith, according to Talmudic tradition, seems to have been originally a malignant ghost changed into a vampire or ghoul. The Old Testament contains allusions to demons, such as the "familiar spirits" of Lev. xx. 6, 27, the "devils" of Lev. xvii. 7, Deut. xxxii. 17, 2 Chron. xi. 15, Ps. cvi. 37, the creatures that haunt the desert, Isa. xiii. 21, 22, xxxiv. 14, 15, as well as the "terror by night" and the "pestilence" of Ps. xci. 5-6. On the other hand, the strongly Yahwistic tendency of the Old Testament was most unfavorable to any development of demonology in the Bible. Even the one demon who retained any real personality, Satan (see DEVIL), plays but a small part in the Old Testament. He is a servant (even, in Job i. 6, ii. 11, reckoned among the sons) of Yahwe and completely under his control, so that he is sharply rebuked by Yahwe in Zech. iii. 1-2 and is obliged to ask Yahwe's permission to tempt Job, in Job i. 6-12, ii. 1-7. That Jewish demonology was far more developed than the extreme Yahwism of the Old Testament would lead one to suppose is clear for several reasons. In the New Testament the power of demons is frequently mentioned. Insanity and disease are laid to demoniacal possession, and Jesus is

tempted by Satan, who is represented as an independent agent of the utmost enmity to God. The existence of storm demons is distinctly implied in the account of the stilling of the tempest in Matt. viii. 26-27, Mark iv. 39, 41, and Jesus is mistaken for a spirit, either a storm demon or a malignant ghost, in Matt. xiv. 26. The Talmudic demonology, like the devil lore of other Semites, as shown by the Koran and the vast Arabic literature, of which the *Arabian Nights* furnishes a familiar example with its tales of the jinns, who are probably ghosts of benignant, or more frequently of malignant, dead, is another proof. Most conclusive of all, perhaps, is the rich demonology of modern Semitic peoples, with its superhuman and posthuman fiends.

In India the development of demonology is still more instructive. Besides the primitive nature gods, there existed nature demons no less ancient. Indra, the storm god, cleaves the dragon Ahi, who has confined the cows representing the rain clouds. Here, too, can be seen the process of syncretism more clearly than in any other religious system. For instance, Indra is the god of the monsoons and is beneficent, while the fearful Rudra typifies the ruin caused by the storm. Yet the benignant Indra and the malignant Rudra become blended into one deity, Indra, who is almost altogether beneficent. While nature demons are ancient, new ghost demons may be and are created constantly. There is an instructive story current in India of an irascible Englishman much dreaded by the natives. After his death his tomb was regularly visited, and propitiatory offerings of brandy and cigars were presented to appease his ghost. On the other hand, the ghost of Rama Krishna, a Hindu ascetic of recent date, has become a beneficent godling about whom the logopoetic tendency universal in religion has already created numerous myths.

Besides the superhuman and posthuman gods and demons, there is a third class of much later origin. These are abstract deities. They occur in nearly all the great religions, as in India, Greece, and especially in Rome. Thus, in India by the time of the later Rig Vedic period, Brahma, the prayer, is practically an abstract deity. The same we now know to be true of Mitra, 'the contract,' and Varuna, 'the oath.' Persia had a large number of abstract demons, as Tarōmaiti (Pride), Akoman (Evil Mind), Duzhayriya (Drought), and the like. In Greece and Rome it will be sufficient to refer to the long list of abstract demons enumerated by Vergil, *Æneid*, vi, 273-281. It is obvious that the abstract gods and demons are more closely allied to the nature divinities than to ghosts.

Demonology is everywhere closely associated with witchcraft. In this, two distinct processes are involved. In the first place the demon must be placed under the control of the wizard, or, more commonly, of the witch. In the second place the demon so controlled may become either noninjurious or malignant to some other person or persons. Control over the demons is gained in many ways. Thus, a beneficent deity or something belonging to him may confer the power over demons. Familiar examples are the magic ring given by Allah to Solomon in the *Arabian Nights*, which enables him to control all jinns, and the tetragrammaton, or mystic letters YHWH of the name Jehovah, or Yahwe (q.v.), during the Middle Ages. Demons may be exorcised or may be invoked against enemies

by an equal variety of methods. Possession of some object belonging to the person to be affected is one of the most common modes. For this reason many tribes have careful regulations, as the ancient Persians, who disposed of parings of nails and clippings of hair according to prescribed form. An extremely widespread superstition of this class is the so-called power of the name. According to this the knowledge of the real name of the individual gives all who possess it control over him, and this may be used for demoniacal purposes. For this reason it is customary in many tribes, as possibly among the North American Indians, to keep their personal names secret. The same view was held by the Jews, as is clear from Rev. ii. 17, xix. 12, Matt. vii. 22. Akin to this acquisition of demoniacal control is the selling of one's soul to the devil to gain some object, as in the famous Faust legend, or in the devotion of the Hindu Thugs to the malignant Kali, the wife of Shiva in his destructive aspect.

As has been suggested above, sacrifice is an important element of demonology. Since this class of offerings must be in general propitiatory, they are usually, in conformity to the nature of the demon, of a bloody or revolting character. Thus, among the Aztecs the war god, Huitzilopochtli, was honored by human sacrifices, the pulsating heart being the offering specially dear to him. The "customs" of Ashanti, with their enormous waste of life, and their cruelty to men and animals, were primarily based on the necessity of appeasing malignant gods. Even among the early Greeks a sacrifice of maidens was given each year to the Minotaur, and in early Rome the Tiber received an annual tribute of aged men. As civilization develops, the sacrifice becomes more and more ritualistic, and substitutes for the bloody offering may be made, as when, instead of sacrificing old men, dolls were thrown into the Tiber.

The change of gods into demons occurs frequently. When one tribe conquered another, it was customary for the pantheon of the defeated people to be incorporated into that of the conquerors. When, however, a nation has reached a monotheistic stage, or is inspired for any other reason by an intense hatred for the religion of the conquered, the gods of the subjected tribe may become demons. This is especially characteristic of later Judaism and Christianity and of Zoroastrianism. Thus, in Ezek. viii. 13-18, among the greatest abominations are classed the annual mourning for Tammuz, an ancient Semitic spring god, familiar to us from the Greek version of the myth in the story of Venus and Adonis, and the worship of the sun, which is most probably an allusion to Zoroastrianism. In this latter religion the gods of India (Skt. *déva*) are demons (Av. *daéva*), and great Indra seems to have been turned into a fiend Andra by the Iranians. In like manner Ceylonese Buddhism sees demons in the old Brahmanic gods, and the jinns of Mohammedanism are the heathen Arabic deities in disguise.

The worship of demons has led to the cult termed diabolism or satanism (q.v.). The earliest mention of such a belief is in the Avesta (q.v.), where adherents of non-Zoroastrian faiths are called *daevayasnians*, or demon worshippers. Persia still has a numerous sect of devil worshippers, called *Yezidis* (q.v.), who endeavor to keep on good terms with the devil that he may not injure them in the future world. A

similar tendency existed to a marked degree in early Christian Gnosticism (q.v.). The sect of the Ophites, e.g., regarded Yahwe as an evil divinity, but the serpent, because of his promise of knowledge (Gen. iii. 5), as the highest god and a benefactor of mankind. The modern cult of satanism seems to be a survival of early Gnosticism. This worship, which is, for obvious reasons, of an occult nature, seems to unite to diabolism the widespread notions of phallicism, or worship of the reproductive powers of nature. Satanism, which is now mainly a travesty of Christianity, finds its culmination in the so-called black mass, where the Christian ritual is parodied in most revolting ways.

Consult: Collin de Planey, *Dictionnaire infernal* (Paris, 1844); Lecanu, *Histoire de Satan, sa chute, son culte, ses manifestations, ses œuvres* (ib., 1861); Hild, *Etude sur les démons* (ib., 1881); Laengin, *Wunder und Dämonenglaube der Gegenwart* (Leipzig, 1887); Conway, *Demonology and Devil-Lore* (2 vols., New York, 1889); Bois, *Satanisme et la magie* (Paris, 1895); Carus, *History of the Devil and the Idea of Evil from the Earliest Times to the Present Day* (Chicago, 1900); Jaulmes, *Essai sur le satanisme et la superstition au moyen âge* (Montauban, 1900); Alexander, *Demoniac Possession in the Old Testament* (Edinburgh, 1902); Thompson, trans., *The Devils and Evil Spirits of Babylonia* (2 vols., London, 1903-04); Fischer, *Geschichte der Buhlteufel und Dämonen* (1906); Eichmann, *Die Angelologie und Dämonologie des Kernes* (1908); Soltau, *Das Fortleben des Heidentums in der altchristlichen Kirche* (1906); Dähnhardt, *Naturagen* (1907); Tarnbornino, *De antiquorum dæmonismo* (1909); Wendt, *Christentum und Dualismus* (1909); and see ANGEL; DEVIL; SOPHIOLOGY; SUPERSTITION.

DEM'ONSTRATION, MILITARY. An operation designed to deceive an enemy, persuading him that danger is threatening from another quarter, and inducing him to divide his force so as to meet the apparent as well as real danger. A demonstration made during the attack, in order to cover the development of the real point of attack, or to discover a vulnerable point in the defense, is called a *feint*. Before deciding the necessity for war, a *demonstration*, i.e., a concentration of military forces at strategic points, may be employed to demonstrate preparedness for war.

DE MORGAN, AUGUSTUS (1806-71). An English mathematician, born at Madura, India. He was educated at Trinity College, Cambridge, was graduated as fourth wrangler (1827), and was professor of mathematics in the University of London (afterward University College) from 1828 to 1831 and from 1836 to 1866. Besides being a mathematician of high rank, he was extensively versed in the history of mathematical and physical science. He gave much time in attempting to formulate Aristotelian logic into a symbolic system and contributed to the methods of calculating insurances and to the encouragement of a decimal coinage. De Morgan was the first president of the London Mathematical Society and was a member of the Royal Astronomical Society. He was a remarkable teacher and a suggestive writer, and his *Essay on Probabilities* (1838) is still one of the best in English. He died in London. The following are among his chief works: *Elements of Arithmetic* (1831); *Elements of Algebra, Preliminary*

to the *Differential Calculus* (1835); *Essay on Probabilities and on their Application to Life Contingencies and Insurance Offices* (1838); *Trigonometry and Double Algebra* (1849); *Formal Logic, or the Calculus of Inference Necessary and Probable* (1847); *Arithmetical Books* (1847); *Treatises on the Differential and Integral Calculus* (1842), published by the Society for the Diffusion of Useful Knowledge; contributions to the *Penny Cyclopædia* and to the *Encyclopædia Metropolitana*, and the *Budget of Paradoxes*, published in book form after his death. A memoir of De Morgan by his widow was published in London in 1882.

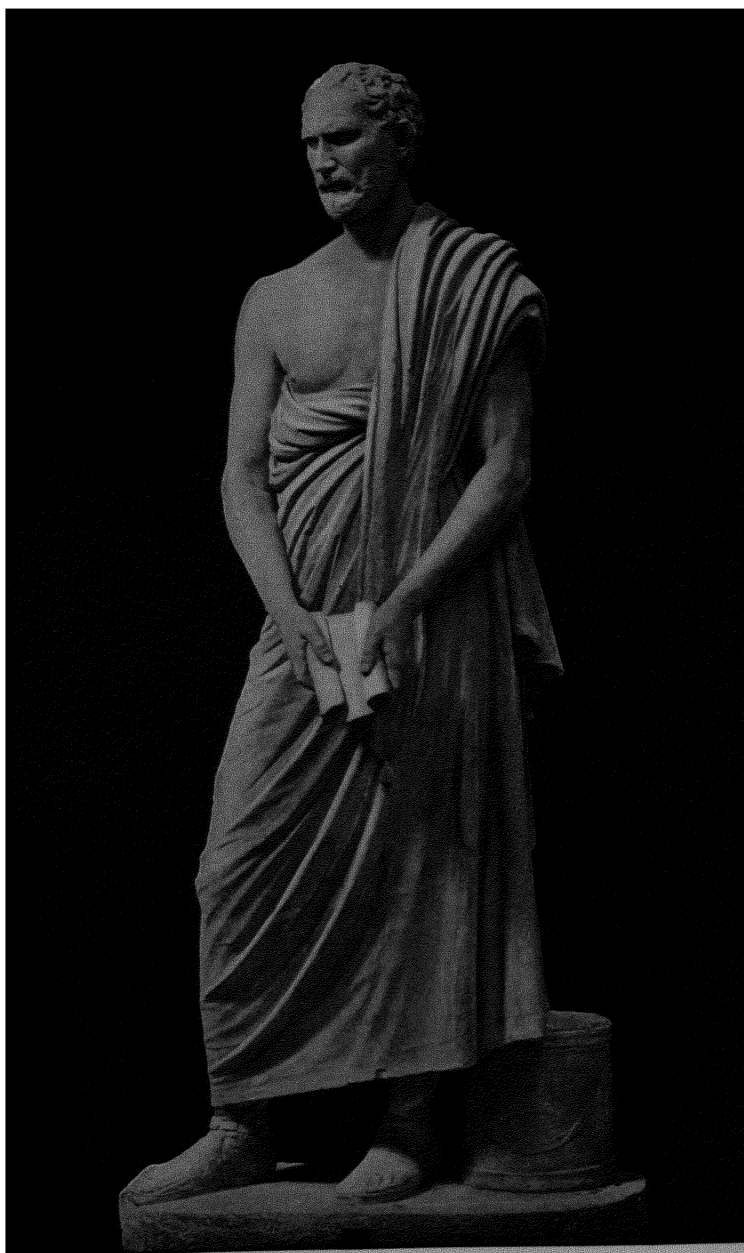
DE MORGAN, WILLIAM FREND (1839-). An English novelist. He was born in London, the son of Augustus De Morgan, grandson of William Frend, and descendant of James Dodson (q.v.). As a boy he attended University College School and later for three years University College itself. He then studied art in 1859 in the school of the Royal Academy—and from 1864 to 1871 (approximately) devoted himself to working in stained glass. Subsequently, for more than 30 years, he was known as a potter who made successful experiments in glazes and lustre and wrote about his craft. He was also of a mechanical turn and invented a duplex bicycle, a smoke-consuming grate, etc. As an illustrator he may be remembered for the illustrations to *On a Pincushion and Other Fairy Tales*, written by his sister Mary Augusta. In 1904, then in his 66th year, he wrote *Joseph Vance*, a novel of well-nigh 300,000 words, which achieved an immediate success on its publication in 1906. Other novels followed, resembling *Joseph Vance* in length and in deliberation of manner. They also were warmly welcomed. De Morgan calls Dickens his master, but in many ways he is more akin to Thackeray. In *Alice-for-Short* (1907) De Morgan has been accused of imitating Wilkie Collins. *Somehow Good* (1908) is the best of his books in construction and style. After *It Never Can Happen Again* (1909) De Morgan attempted in *An Affair of Dishonor* (1910) to write a historical romance of the eighteenth century; he might have succeeded better if the plot had been less improbable or distasteful. A *Likely Story* (1912), first called *Bianca*, is in part a historical romance, with an Italian setting which repeated sojourns in Italy enabled him to paint faithfully. When *Ghost meets Ghost* (1914) is nearer the earlier manner, and scene and coincidences are piled up one on another without direct or obvious bearing upon the main drift of his tale. In all his stories De Morgan leans heavily upon the long arm of coincidence for assistance in the resolution of his plots, but his skill as a storyteller often gives a chance conclusion the air of an inevitable dénouement. His milieu is now the London slum, now English higher society. In the naturalness of his dialogue, which has the quality of living speech, he excels. He is skillful also in the use of dialects and scores notably in the dialect passages of his stories. The company of adults to whom he introduces us is often memorable and charming, and his sketches of children are singularly happy. Character is more to him than plot, and his own rambling comments have an appeal at least as strong as the narrative itself. He must certainly be counted one of the most agreeable and beguiling novelists of his generation. Consult W. L. Phelps, *Essays*

on *Modern Novelists* (New York, 1910), and F. T. Cooper, *Some English Story-Tellers* (ib., 1912).

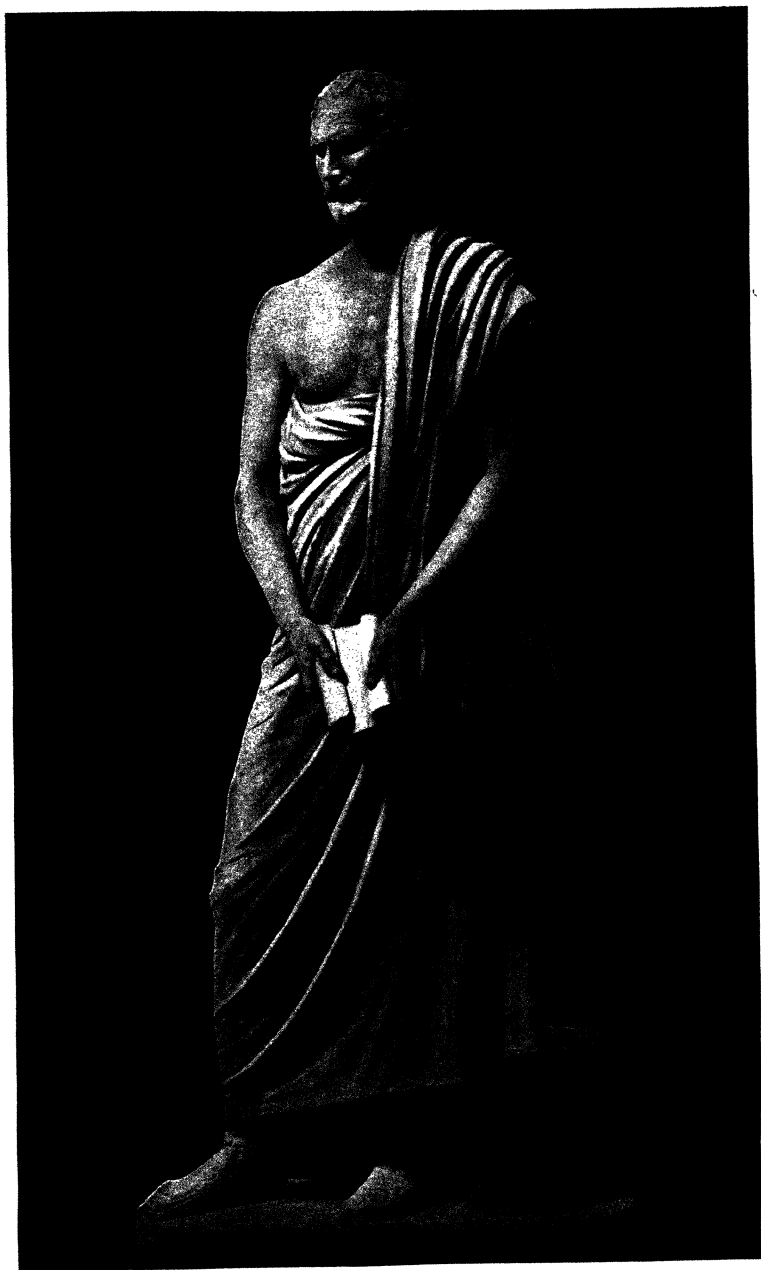
DEMOS (Gk. δῆμος, *dēmos*, people). A word used in Greek to denote both the body of Athenian citizens and a political subdivision of the city, a township. A statue of the *Demos* (the people) by Lyson stood in the Senate House at Athens. See *DEME*.

DEMOSTHENES (Gk. Δημοσθένης) (c.383-322 B.C.). The greatest orator of the ancient world. He was born in the deme Peania, in Attica. His father, a wealthy manufacturer, died when Demosthenes was but seven years old; his fortune and his children he left to the care of three guardians, who abused their trust. As soon as Demosthenes came of age he prosecuted at law these trustees and gained a verdict against them; but much of the property had already been squandered, and we cannot tell whether he was able to collect the amount awarded to him by the court. His success in this and some other civil causes fixed his resolution to devote himself to public life, and he set himself to master the law and politics of his country with a labor and perseverance almost without parallel. His first appearance before the people was a failure, but this spurred him to overcome his defects. His first care was to conquer the physical disadvantages under which he labored; his health was naturally feeble, his voice harsh and tuneless, and his action ungraceful. To improve his delivery, he took instruction from Satyrus, the actor, and did not disdain to study effects before a mirror. His feebleness of health he never fairly overcame; but he obviated the defects of his early training by the severest study pursued for months at a time without an interruption. Throughout his life he gave much time to the writing of speeches to be delivered by himself, or more often by others, in private suits; 33 such orations have come down to us under his name, but only 14 of these are now regarded as by Demosthenes. He was less effective in such suits than in his political speeches.

Demosthenes first took part in public affairs when about 25 years of age; from that time his history is the history of Athens. The states of Greece were miserably weak and divided and had recklessly shut their eyes to the dangerous encroachments which Philip of Macedon was already making on their liberties. The first period of Demosthenes' public life was spent in warning his countrymen to forego their mutual jealousies and unite their forces against the common enemy, whose crafty and grasping policy he exposed, about 351 B.C., in the oration known as the *First Philippic*, the most eloquent and the most effective of his speeches against Philip and in condemnation of the supineness of the Athenians. In 347 Philip became master of Olynthus, the last outpost of Athenian power in the north, which, in a series of splendid harangues—the three *Olynthiacs*—Demosthenes had implored his countrymen to defend. Peace was now necessary for Athens, and Demosthenes and Æschines (q.v.) were among the ambassadors sent to negotiate with the conqueror; but Macedonian gold had done its work, and Demosthenes, as incorruptible as he was eloquent, saw with despair that Philip was allowed to seize Thermopylae, the key of Greece, and become a member of the Amphictyonic League.



DEMOSTHENES
FROM THE STATUE IN THE MUSEUM OF THE VATICAN, ROME



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one of the greatest controversies of the Methodist Episcopal church. Dempster's *Lectures and Addresses* were collected and published in 1864. Consult this book and also an article in the *Methodist Quarterly Review* for 1864.

DEMPESTER, THOMAS (c.1579-1625). A Scottish scholar and author, born at Clifton, in Aberdeenshire. The details of his life are given in an untrustworthy autobiography, but from other sources it seems that he was educated at Cambridge and was professor first at Pisa and later at Bologna. He left a *Historia Ecclesiastica Gentis Scotorum* (1627), which, while curiously dishonest concerning earlier personages, is sometimes valuable for the information it gives of the author's contemporaries. The Ballantyne Club issued an edition of it in 1829. Dempster's best work is an annotated edition of Accolti's *De Bello a Christianis contra Barbaros Gesto* (1623), and he also enjoyed a good reputation as a Latin poet.

DEMULCENTS (Lat. *demulcere*, to stroke down, soften, from *de*, down + *mulcere*, to stroke). Bland and lubricating liquid substances taken by the mouth for the purpose of soothing irritation of the mucous membranes of the gastrointestinal tract and reflexly of the larynx and bronchi. The same substances are also given in enemata to relieve irritation of the lower portion of the bowels. Water must be classed as the most valuable of the demulcents. Demulcents are chiefly composed of starch, or gum, or of substances containing these, dissolved in water; sometimes also of oily matters, or the white of eggs, and other albuminous or gelatinous substances largely diluted. The decoction of althea, or marshmallow, is a favorite form of demulcent; flaxseed tea is a common domestic remedy of this class. Gelatine, isinglass, glycerin, honey, and starch are other demulcents in common use.

DEMURRAGE (OF. *demorage*, from *demor*, to delay, from Lat. *demorari*, to delay, from *de*, down + *morari*, to delay). In admiralty law, an allowance made to the master or owners of a ship by the freighter when she is detained in port by the latter beyond the specified time of sailing. A certain number of days, called running or working days, are allowed for receiving and discharging cargo, and it is usually stipulated in charter parties that the freighter may detain the vessel, either for a specified time or as long as he pleases, on paying so much per diem for overtime. All the ordinary causes of detention, such as port regulations, the crowded state of the harbor, and the like, are at the risk of the freighter, and demurrage must be paid, though it be proved that the delay was unavoidable, unless it is due to the shipowner's fault. The demurrage ceases as soon as the vessel is cleared for sailing, though she should be prevented from actually doing so by adverse winds. When the days of demurrage are limited by special contract, and the ship is detained beyond them, the sum due as demurrage under the contract will be taken as the measure of the loss for the further time which may be claimed in the form of damages. It will be open, however, to both parties to show that the rate thus fixed per diem is either too high or too low. Where there is no stipulation beyond the ordinary agreement that the usual time shall be allowed for loading and unloading, the master will be entitled, when this period expires, either to sail

or to claim damages for detention. A suit for the recovery of demurrage is an admiralty and maritime case. Consult the authorities referred to under ADMIRALTY LAW. For the technical use of the word as a charge for the detention of freight cars, see RAILWAYS, *Freight Service*.

DEMURREE (Lat. *demorari*, Fr. *demor*, to wait or stay). A pleading which in legal effect admits the facts alleged by the opposite party to be true for the purpose of argument, but denies that they are sufficient, as a matter of law, to sustain his claim; or which sets up that there is some other defect on the face of the pleading which is a legal reason why the plaintiff should not be allowed to proceed under it. It is always based solely upon what is stated in the pleading to which it is interposed and cannot contain any other defense.

Its purposes vary somewhat in different jurisdictions; but generally, in addition to denying that the facts alleged constitute a cause of action, it may be used to put in issue the jurisdiction of the court, the capacity of the plaintiff to sue, that another action is pending between the parties for the same cause, that there is a defect of parties plaintiff or defendant, or that several causes of action are improperly joined in the same pleading. It may be interposed to any pleading of either plaintiff or defendant which alleges "new matter," i.e., something in addition to what was set out in the last previous pleading.

It is in the discretion of the court to allow the party whose pleading is thus attacked to amend if the objection is well taken and sustained, and great liberality is shown by the courts in this respect, especially where the defect is in some technical matter of form, and an amendment curing it would not prejudice the opposite party. On the other hand, if the demurrer is overruled, the demurrant is usually allowed to interpose an answer or reply to the pleading which he had attached by the demurrer if he can convince the court there is probable merit in his proposed defense. These privileges are usually granted upon terms, as the imposition of costs to date of the argument. The demurrer has been abolished in England, and other proceedings designed to accomplish like results substituted in the King's Bench and Chancery divisions of the High Court, but is retained and in constant use in most of the United States, both under the codes of civil procedure and the modified common-law system of pleading. See ANSWER; PLEADING.

DEMY, *dé-mi'* (Fr. *demi*, from Lat. *dimidius*, half). A term applied to those holders of scholarships in Magdalen College, Oxford, called demyships. The name would seem to be a shortened form of the Latin *demi-socii* (half-fellows), the formal term by which they are more elegantly distinguished. Of the 43 demyships, there are eight senior, each valued at £100, and 35 junior, of the value of £80 a year. Addition was a demy.

DEMY. A particular size of paper. In America writing demy is a sheet 16 by 21 inches, double demy being 21 by 32. In England writing demy is 15 by 20 inches; printing demy is 17½ by 22 inches; and double demy, 26 by 38½ inches.

DENAIN, *dé-nân'*. A town in the Department of Nord, France, at the junction of the

Selle and the Scheldt, 5 miles southwest of Valenciennes (Map: France, J 2). It owes its prosperity to its situation in the centre of an extensive coal field. The immediate vicinity of iron mines also gives it unusual facilities for smelting, and its works of this kind are of considerable importance. It has some manufactures of beetroot sugar, glass, beer, oil, ships, steel, candy, and spirits. Pop., 1901, 23,204; 1911, 26,800.

DENARIUS (Lat. from *deni*, ten each, from *decem*, ten). The principal silver coin of ancient Rome. The earliest money of Rome was of bronze, and the standard was the *as* (q.v.), nominally, at least at first, a pound of bronze. In 269 B.C. the *as*, which had decreased in size and value, was fixed by law at a lower valuation, and a silver coinage was introduced. The chief silver coins were the *denarius* (= 10 *asses*), the *quinarus* (= 5 *asses*), and the *sestertius* (= 2½ *asses*). At first the normal weight of the denarius was 4 scruples, or ⅓ of a pound (4.55 grams). About 217 B.C. the *denarius* was made equivalent to 16 *asses* (the *as* had been still further reduced), and remained so (about 17 cents) until the time of Nero, after which it underwent a gradual diminution until silver money disappeared entirely in the third century A.D. (See Plate II of NUMISMATICS.) For the earlier period, after Rome became a world power, the denarius was the basis of coinage outside of Italy, especially in the Adriatic territory and in western Europe. Consult Hill, *A Handbook of Greek and Roman Coins* (New York, 1899).

DENARY SCALE. See NOTATION.

DE NATURA DEORUM (Lat., On the Nature of the Gods). A treatise on the nature of the gods by Cicero, containing an exposition of the Epicurean and Stoic philosophies, and a criticism of both from the point of view of the Academics; in the form of a conversation between representatives of the three schools.

DENATURED ALCOHOL. See METHYLATED SPIRIT, FUEL.

DENBIGH, dēn'bī (Welsh, *Din-bach*, little fort). A municipal borough and the county town of Denbighshire, Wales, 30 miles west of Chester (Map: Wales, C 3), in a region of much historic interest. It stands in the vale of the Clwyd, on the sides and at the foot of a rugged, steep, limestone hill, crowned by the imposing ruins of a castle built in 1284 by Henry de Lacy, Earl of Lincoln. The town sheltered Charles I after the battle of Rowton Moor. It was taken by the Roundheads, but was dismantled after the Restoration. Other structures of interest are the Carmelite Priory (founded perhaps as early as the thirteenth century), the town hall, dating from 1572; the old parish church; a Bluecoat school (1514), and a free grammar school (1527). A lunatic asylum for the five counties of North Wales was erected near the town in 1848. The town's chief industries are bootmaking, butter making, poultry farming, and tanning and quarrying, and there is considerable timber trade. The Welsh vernacular newspaper, *Baner*, is published here. Pop., 1901, 6438; 1911, 6892. Henry M. Stanley, the African explorer, was born near Denbigh.

DENBIGHSHIRE. A county of North Wales, on the Irish Sea and between the Dee and the Conway. It contains 662 square miles with 8 miles of coast. The surface is rugged

and mountainous in the north; about two-thirds is under cultivation. Its corn, cheese, butter, and live stock are greatly esteemed. Near Wrexham are coal measures more than 4 miles broad. The chief towns are Denbigh, the capital, Wrexham, Ruthin, and Llangollen. The county was formed in the reign of Henry VIII. Limestone caves in the mountainous regions yield many relics of prehistoric men and animals, and there are traces of several Roman roads. Pop., 1901, 131,582; 1911, 144,783.

DENBY, CHARLES (1830-1904). An American lawyer and diplomat, born at Mount Joy, Va. He studied at Georgetown University and the Virginia Military Institute, was admitted to the bar in 1855, and practiced law in Indiana. During the Civil War he rose to be colonel of the Forty-second and the Eightieth Indiana Volunteer Infantry. From 1885 to 1898 he was Minister to China and in the latter year became a member of the commission for the investigation of the conduct of the war with Spain. In 1899 he became a member of the United States Philippines Commission. He wrote a valuable book on *China and her People* (2 vols., 1906).

DENDERAH, dēn'dēr-ä (Gk. *Τέντυρα*, *Tentyra*, Coptic *Tentore*, perhaps "the goddess," evidently the end of a longer, mutilated name). A village of Upper Egypt, on the left bank of the Nile, opposite the large city of Keneh, in about lat. 26° 12' N. (Map: Egypt, C 2). The ancient temple west of the village is one of the best preserved and most beautiful of ancient Egypt. The portico (51 yards wide) has 24 columns, bearing the head of the goddess of Denderah; the interior is divided into 27 rooms. This temple is said to stand on the site of a building dating from the time of King Cheops (q.v.), which was restored in the twelfth and eighteenth dynasties. The present structure was begun under Ptolemy XIII Auletes, and the temple was dedicated under Tiberius, although some details of the ornamentation date from his immediate successors. Among the many pictures and inscriptions, which are of rather moderate execution, a representation of the zodiac (or, better, the sky) aroused much interest after its publication in the *Description d'Égypte*; it has, however, proved to be merely a mythological representation and of no value for astronomical purposes. (Consult Letronne, *Observations sur l'objet des représentations zodiacales de l'antiquité* (Paris, 1824). For information about the cow-formed goddess Hathor of Denderah, see *ATHOR*.) The tombs of the ancient princes of Denderah of the fourth to the eighteenth dynasty were excavated by Flinders Petrie in 1898. Consult Petrie, *Denderah*, eighteenth memoir of the Egyptian Exploration Fund (1900). For the inscriptions, consult Mariette, *Denderah* (Paris, 1870-80), and Dumichen, *Baugesckichte des Denderatempels* (Strassburg, 1877).

DENDERMONDE, dēn'dēr-mōn'de. A fortified town of Belgium, in the Province of East Flanders, at the confluence of the Dender and the Scheldt, 18 miles east of Ghent. It has a fine church, which contains a number of paintings by Van Dyck and De Crayer, an old citadel, and an elaborately decorated fourteenth-century town hall (Map: Belgium, C 3). It numbers among its institutions a bishop's college and an academy of drawing. There are bleacheries and manufacturing establishments for the pro-

duction of leather, cotton goods, soap, and linen. Dendermonde was besieged in 1667 by Louis XIV, from whose hands it was saved by the opening of the sluices, which resulted in the flooding of the surrounding country. It was taken by the French in 1745. Pop., 1900, 9953; 1910, 10,193.

DENDRITIC AGATE. See MOCHA STONE.

DENDRITE (Gk. *dendritēs*, *dendritēs*, of or pertaining to a tree, from *dendron*, *dendron*, tree). The peculiar treelike or branching effect found in minerals and due to the crystallization in them of certain metallic oxides, especially that of manganese. The well-known moss agate or mocha stone is a typical illustration of the dendritic markings due to manganese oxide, which are distributed through the mineral, producing a mosslike appearance. Dendrites are frequently used as gem stones.

DENDRITE. A process which passes off from a nerve cell. See NERVOUS SYSTEM AND BRAIN.

DENDROLITES. See PETRIFIED WOOD.

DENDY, ARTHUR (1865-). An English zoologist, educated at Manchester Grammar School and at Owens College, Manchester. He became an assistant in the zoological department of the British Museum in 1887; was demonstrator in the University of Melbourne in 1888-94, professor of biology in Canterbury College, University of New Zealand, in 1894-1903, and of zoology in South African College, Cape Town, from 1903 to 1905; and in 1905 was chosen professor of zoology in King's College, University of London. Besides contributions to technical journals on embryology, anatomy, etc., he wrote *Outlines of Evolutionary Biology* (1912).

DÉNÉ. A name frequently used for all the Athapascan-speaking Indians of the Mackenzie Basin and the Rocky Mountain region in Canada. See ATHAPASCAN STOCK.

DENEEN, de-nēn', CHARLES SAMUEL (1863-). An American lawyer and public official, born at Edwardsville, Ill. He graduated from McKendree College in 1882, taught school, was admitted to the bar in 1886, and from 1890 to 1904 practiced law in Chicago. He was a member of the Illinois House of Representatives (1892), attorney for the Sanitary District of Chicago (1895-96), and State's attorney for Cook Co., Ill. (1896-1904). From 1905 to 1912 he was Governor of Illinois, he afterward served as attorney for the Butts legislative committee investigating (August, 1913) the voting-machine scandal in Chicago.

DENFERT-ROCHEREAU, dān'fār' rō'-she-rō', PIERRE MARIE PHILIPPE ARISTIDE (1823-78). A French officer, born at Saint-Maixent (Deux-Sèvres). He studied at the Ecole Polytechnique, entered the engineer corps, and served as a captain in the Crimean War. In 1864 he was appointed chief engineer of Belfort, of which fortress he became governor with the rank of colonel in 1870. During the Franco-German War he defended the fortress from October, 1870, to February, 1871, and surrendered only when ordered to do so by the government (February 16). He was elected to the National Assembly in 1871 and 1877. He assisted Thiers and De la Laurencie in the preparation of the *Histoire de la défense de Belfort* (Paris, 1871) and wrote *Des droits politiques des militaires* (1874). His heroic defense of Belfort is there commemorated by Bartholdi's colossal granite "Lion."

DENGUE, den'gā (Sp. *dengue*, prudery, fastidiousness, from Lat. *deneigare*, to deny, refuse), or **BREAKBONE FEVER**, also called **DANDY** and **BUCKET** (corrupted from Bouquet) **FEVER**. The disease was first authentically observed in Spain (1764-68). It was accurately described by Brylton of Java in 1779 and by Rush of Philadelphia in 1780. In 1780 the fever was epidemic in Spain, India, and the United States; in 1827-28 in the West Indies and in Charleston, S. C.; in 1848-50 in South Carolina, Georgia, Alabama, Louisiana, and Texas. From 1870 to 1873 another epidemic spread over India, East Africa, and Java, reaching the Gulf States of the United States in 1873. In New Orleans alone 40,000 people were attacked. Other widespread epidemics occurred in 1890, 1893, 1895, 1896, 1897, and 1904, covering much the same territory. Its symptoms are chill, two febrile reactions, intense headache, pain and swelling about the joints, and severe pain in the bones, a rose-colored eruption over the body, and great prostration. It is rarely fatal. The names "dengue" and "dandy" are said to have been applied to the disease because of the stiff erectness and careful walk of those afflicted. It is now believed to be a mosquito-borne disease due to a hematozoön, differing in its life history from the malarial plasmodium in that it does not form pigment. Quinine is used in its treatment, but it has no specific effect. Calomel purges, followed by Dover's powder for sleeplessness, and the salicylates or coal-tar derivatives for pain, is the treatment generally followed.

DENHAM, den'am, DIXON (1786-1828). An English explorer. He was born in London, educated at Merchant Taylors' School, and was articled to a solicitor, but joined the army in 1811. He fought in the Peninsular campaign, distinguished himself at the battle of Toulouse by his daring and gallantry, and subsequently served in the Netherlands. He was associated with Clapperton and Oudney in an exploring expedition to Central Africa, which reached Lake Chad by way of Tripoli and Murzuk in 1823. In 1828 Denham became Governor of Sierra Leone. Consult his *Narrative of Travels and Discoveries in Northern and Central Africa* (1826).

DENHAM, SIR JOHN (1615-89). An English poet, born in Dublin, Ireland, the son of an Irish judge bearing the same name. He was educated at Oxford and studied law at Lincoln's Inn. His first publication was a tragedy, called *Sophy* (1642), performed with applause at Blackfriars. To 1642 also belongs the first version of *Cooper's Hill*, which is the earliest of English descriptive poems, and became Pope's model for *Windsor Forest*. According to Johnson, he should be credited with first making the heroic couplet terse and epigrammatic. In 1665 appeared a corrected edition of Denham's poem, containing the famous address to the river Thames: "O could I flow like thee," etc. Denham was engaged in secret service for Charles I, but, being discovered, he was obliged to escape to France in 1648, returning thence to England in 1652. After the Restoration he was appointed surveyor-general of his Majesty's buildings and created Knight of the Bath. The latter part of his life was darkened by madness, but, recovering for a short time, he commemorated the death of Cowley in one of his happiest poems. He was buried in Westminster Abbey. Consult Chalmers, *English Poets* (London,

1810), and Ward, *English Poets* (London, 1880-83). The *Bibliotheca Curiosa*, vol. i (Edinburgh, 1885), includes Denham's political satires. There is no critical edition.

DENHARDT, den'härt, CLEMENS (1852-) and his brother GUSTAV (1856-). Two distinguished German explorers, born in Zeitz. In association with the physician G. A. Fischer they undertook in 1878 a tour through the Tana River region, East Africa, which they endeavored to secure to German commerce. Six years later they entered upon a second expedition, extending from the island Lamu to Vitu (March, 1885), where the Sultan of the Swahili requested the establishment of a friendly treaty with Germany based upon proposals made by him 18 years previously. Part of the territory acquired by Clemens Denhardt was afterward transferred by him to the German colonial society known as the *Deutsche Wituesellschaft*. In 1890 all rights to this territory were ceded by Germany to England in exchange for Helgoland, the German government compensating the brothers with an indemnity of 150,000 marks. An important work by Clemens Denhardt was published in 1883 in the *Mitteilungen des Vereins für Erdkunde* at Leipzig under the title, *Anleitung zu geographischen Arbeiten bei Forschungsreisen*.

DENIA, da'ne-à (Lat. *Dianium*, from a temple of *Diana* situated there). A seaport town of eastern Spain, situated on the east coast of the Province of Alicante (Map: Spain, F 3). It has a small harbor and a lighthouse and is the seat of an important trade in raisins and salt. In its vicinity are found some Roman antiquities. Pop., 1900, 12,431; 1910, 12,161.

DENIFLE, da-nèfle (FRIEDRICH) HEINRICH SUSE (1844-1905). An Austrian priest and historian, born at Imst, Tirol. He studied at Brixen and in 1861 entered the Order of the Dominicans at Gratz. Having received holy orders in 1866, he completed his studies in Rome and in 1876 became professor of theology in the Dominican monastery at Gratz and acquired high reputation as a pulpit orator. Summoned to Rome in 1880 as representative of his order for Germany, he was appointed archivist in the Vatican in 1883 and intrusted with a new edition of the works of Thomas Aquinas. He was an authority on the mystic literature and the universities of the Middle Ages. Among his principal writings are: *Nikolaus von Basel* (1875); *Das geistliche Leben: Eine Blumenlese aus den deutschen Mystikern des 14. Jahrhunderts* (1873; 5th ed., 1904); *Die Schriften des seligen H. Seuse* (1878-80), an incomplete edition; *Das Buch von geistlicher Armut* (1877); *Die Universitäten des Mittelalters bis 1400* (1885), especially important as correcting Du Boulay on the early history of the University of Paris; *Die päpstlichen Registerbände des 13. Jahrhunderts, etc.* (1886); *Les universités françaises au moyen âge* (1892), supplemented by an edition (1899-97; with Chatelet) of the *Chartularium* of the University of Paris; and *Luther und Luthertum* (1904-09; last part ed. by Weis), which roused a great controversy in Germany—Denifle answering Seeberg, Harnack, and other critics of his first volume with *Luther in rationalistischer und christlicher Beleuchtung* (1904). He was associated with Franz Ehrle in editing the *Archiv für Literatur und Kirchengeschichte Mittelalters* (1885-1900) and died on his way to

Cambridge University where he and Ehrle were to receive honorary degrees. Consult the sketches by Grauert (Freiburg, 1906) and Grabmann (Mainz, 1905).

DENIKER, JOSEPH (1852-). A French anthropologist and ethnographer, born in Astrakhan, Russia, of French parents. He was educated at the St. Petersburg Technological Institute and, after working as an engineer in various European oil fields, at the University of Paris. In 1888 he was chosen librarian of the Paris Museum of Natural History. His book on *The Races of Man* (1900) is one of the most important works on the subject in English. In French his principal publications are: *Anatomie et embryologie des singes anthropoïdes* (1886); *Les races de l'Europe* (1896-1908); *Bibliographie des sociétés savantes de la France* (1889-95); *Les six races de l'Europe* (1904, Huxley Memorial Lectures); *Les races et peuples de la terre* (1913).

DENINA, dà-ne'na, GIACOMO MARIA CARLO (1731-1813). An Italian historian, born at Revello, Piedmont. Educated at Saluzzo and Turin, he began his career as a teacher, becoming professor at Turin in 1770. Clerical opposition to his liberalism made an offer from Frederick the Great to come to Berlin acceptable in 1782. In 1804 he received a position from Napoleon in Paris. The most important of his many scholarly works is his *Delle rivoluzioni d'Italia* (1769-72), a synthetic, well-documented history of Italy, colored by French philosophy, and positioning the ancient Roman spirit, revived in the mediæval communes, as the motive force of Italian life. Consult Surra, *Vita di C. D.* (Turin, 1902), and trans. of *Rivoluzioni* by Langhorne (London, 1773).

DENIO, HIRAM (1799-1871). An American jurist, born at Rome, N. Y. Several years after his admission to the bar he removed to Utica, where he became distinguished as a lawyer. He was three times elected judge of the Court of Appeals and retired from that office in 1866. He was one of the most distinguished jurists of his day, and his decisions are often cited. His works include: *Reports of Cases Argued and Determined in the Supreme Court and in the Court for the Correction of Error* (5 vols., 1845-48); and an edition of the *Revised Statutes of New York*, in collaboration with William Tracy (2 vols., 1852).

DENIS, Fr. pron. de-né', or DIONYSIUS, SAINT. The apostle of France and first Bishop of Paris, who according to tradition, suffered martyrdom in the third century. He was sent, it is said, from Rome about 250 A.D. to preach the gospel to the Gauls. He settled on an island in the Seine, near the present city of Paris, and made numerous proselytes. Sisinnius Pescennius, who was then the Roman Governor of this part of Gaul, ordered Denis to be brought before him, along with his two companions, Rusticus, a priest, and Eleutherius, a deacon. As they continued firm in their faith in spite of threats, he caused them to be cruelly tortured and afterward beheaded, 272 A.D., or, as others say, 290. Gregory of Tours, Fortunatus, and the Latin martyrologists state that the bodies of the three martyrs were thrown into the Seine, but taken up by a pious woman named Catulla and interred near where they lost their lives. At a later period a chapel was built over their tomb. In 636 King Dagobert founded on the spot the Abbey of St. Denis. The Greek church makes

St. Denis to be the same person as Dionysius the Areopagite, first Bishop of Athens (q.v.). The Roman Catholic church celebrates his memory on October 9. For a long time his name was the war cry of the French soldiers, who charged or rallied to the words *Montjoye Saint Denis*. Consult Verceley, *Vie de Saint Denis* (Paris, 1854), and Tailliar, *Apostolat de Saint Denis* (Amiens, 1869).

DENIS, de-né', JEAN FERDINAND (1798-1890). A French traveler and author. He was born in Paris and early devoted himself to the study of the principal European and Oriental languages with a view to a diplomatic career. His love of travel, however, induced him to go to South America in 1816; he spent several years in Brazil, studying its condition and resources, and after his return home prepared to write a history of that realm and of some of the other South American countries and subsequently visited Portugal and Spain. In 1838 he was appointed librarian in the Ministry of Public Instruction, and in 1841 custodian of the library of Sainte-Geneviève, of which he became administrator in 1865. Among the great number of his writings may be mentioned: *Le Brésil, ou histoire, mœurs, usages, et coutumes de ce royaume* (1821); *Buenos Ayres et le Paraguay* (1823); *La Guyane* (1824); *Scènes de la nature sous les tropiques, et de leur influence sur la poésie* (1824); *Résumé de l'histoire littéraire du Portugal et de l'histoire littéraire du Brésil* (1826); *Chroniques chevaleresques de l'Espagne et du Portugal* (1837); *Le Brahme voyageur ou la sagesse populaire de toutes les nations* (1833); *Camocns et ses contemporains* (1841).

DENIS, da'nis, MICHAEL (1729-1800). An Austrian bibliographer and poet. He was born at Scharding, Upper Austria, and was educated at Passau by the Jesuits, whose order he joined in Vienna in 1747, devoting himself to the profession of teaching. In 1784 Denis was appointed custodian of the Imperial Library. He deserves much credit for having elevated the standard of bibliography as a science, but his chief merit is that he furthered literary taste in Austria, making that country participate in the revival of letters which was then agitating Germany. He translated Ossian into German and was a great admirer of Klopstock, in imitation of whose bard poetry he composed lyrics under the name of "Sined [anagram of Denis] the Bard." His poetic productions comprise: *Poetische Bilder der meisten kriegerischen Vorgänge in Europa seit 1756* (1760); *Die Lieder Sineds des Barden* (1773); *Ossians und Sineds Lieder* (1784-85). Among his valuable bibliographical writings are: *Grundriss der Bibliographie und Bucherkunde* (1774); *Einleitung in die Bucherkunde* (1777-78); *Merkwürdigkeiten der garrellischen Bibliothek* (1780); *Wiens Buchdruckergeschichte bis 1560* (1782; supplement, 1793); *Lesefrüchte* (1797).

DENIS, da'nis, PAUL CAMILLE (1795-1872). A German civil engineer, born at Mainz. He studied at the Ecole Polytechnique of Paris, entered the Bavarian civil service in 1817, and in 1834 became a member of the commission for the construction of the Danube-Main Canal. In 1835 he built from Nuremberg to Fürth the first railway in Germany. Subsequently he was known as a builder and director of railways.

DENISON. A city and the county seat of Crawford Co., Iowa, 65 miles north by east of Council Bluffs, on the Boyer River and on the

Illinois Central and the Chicago and Northwestern railroads (Map: Iowa, B 3). It is the seat of a normal and business college, contains a hospital, and carries on a considerable trade in live stock, grain, flour, poultry, and dairy products. The leading industrial establishments are flouring mills, a cold-storage and ice plant, and creameries. There are municipal water works. There was an Indian massacre at Fort Purdy, 1 mile from here, in 1849. Pop., 1900, 2771; 1910, 3133.

DENISON. A city in Grayson Co., Tex., 72 miles north by east of Dallas, on the Missouri, Kansas, and Texas, the Missouri, Oklahoma, and Gulf, the Texas and Pacific, the Houston and Texas Central, and the St. Louis and San Francisco railroads (Map: Texas, D 3). It is a railroad centre, containing shops of four systems, and has important manufacturing and jobbing interests. There are cotton, cottonseed-oil, and flouring mills, creosote works, a handle factory, grain elevators, and a mattress and felt factory. Among the noteworthy features are St. Xavier's Academy, Washington School, public library, Union Station, government building, Forest and Munson parks, and the city hospital. Settled in 1872, Denison was incorporated the same year. It has adopted the commission form of government and owns its water works. Pop., 1900, 11,807; 1910, 13,632; 1914 (U. S. est.), 14,409.

DENISON, CHARLES WHEELER (1809-81). An American clergyman and author, born in New London, Conn. For a time he edited the *Emancipator*, one of the early antislavery periodicals; in 1853 was appointed United States Consul in British Guiana, and during the Civil War spoke in behalf of the Federal cause among English workmen in Lancashire, and was post chaplain at Winchester, Va., and a hospital chaplain at Washington, D. C. His publications comprise two volumes of verse, *The American Village and Other Poems* (1845) and *Out at Sea* (1867); a story, *Antonio, the Italian Boy* (1873); *The Child Hunters* (1877); and biographies of Generals Grant, Hancock, and Banks.

DENISON, GEORGE TAYLOR (1839-). A Canadian soldier and author, born in Toronto. He was educated at Upper Canada College and Toronto University (LL.B., 1861) and was called to the bar in 1861. He early entered the volunteer militia service and in 1868 became lieutenant colonel of the Governor-General's bodyguard. In the same year he was on active service during the Fenian raid. Although of Conservative affiliations, he was not a strict party man, his attitude being determined by his concern for the assertion of Canadian interests so far as these were consistent with the unity of the Empire. In 1867 he was one of the founders of the Canada First party. In 1872 he was an unsuccessful Liberal candidate for the House of Commons. In 1872 and 1873 he was sent by the Ontario government to England as a special commissioner on matters connected with immigration, and in 1877 he was appointed police magistrate of Toronto. He was again on active service during the rebellion led by Riel in the Northwest Territories in the spring of 1885. He was president of the Imperial Federation League in Canada in 1893-95 and became president of its successor, the British Empire League in Canada, in 1896. In 1903 he was appointed president of the Royal Society of Canada, and in 1910 vice president of

the Royal Colonial Institute. He began early to write on military subjects and also on problems of national defense. His *History of Cavalry* (1877) won the prize of 5000 rubles offered by the Czar for the best work on that subject, was translated into Russian and subsequently also into German and Japanese. He also wrote: *The Fenian Raid at Fort Erie* (1866); *Cavalry Charges at Sedan* (1872); *Canada and her Relations to the Empire* (1895); *Soldiering in Canada* (1900); *The Struggle for Imperial Unity* (1909).

DENISON, HENRY WILLARD (1846-1914). An American jurist, born in Guildhall, Vt., and educated in the Lancaster (N. H.) Academy and the Columbian Law College, Washington. In 1889 he was appointed United States Vice Consul to Kanagawa, Japan, and in 1890 left the consular service to become the legal adviser of the Japan Foreign Office. At Portsmouth, N. H., in 1905 he was the representative of Japan in the drafting of the peace treaty with Russia. He became a member of the Permanent Court of Arbitration of The Hague and of the Association de Législation Comparée, Paris, and was decorated with the grand cordons (first class) of the Imperial Japanese Order of the Rising Sun and of the Japanese Order of the Sacred Treasure.

DENISON UNIVERSITY. An educational institution, situated at Granville, Ohio. The university was organized by the Baptist Education Society in 1831 as a manual-labor school, under the name of the Granville Literary and Theological Institution. The manual-labor idea, however, did not prove successful and was soon abandoned. In 1856 the name of the institution was changed to Denison University in honor of William S. Denison, one of its principal benefactors. The theological department was discontinued in 1870. The university offers degrees in arts and science. In 1900 Shepardson College for women, established in 1887, became affiliated with the university. The property value of the two institutions, including their endowment funds, is estimated at about \$1,250,000. The university had a registration in 1914 of over 600 students. The library contained about 35,000 volumes besides pamphlets.

DENITRIFICATION. See NITRIFICATION.

DENIZEN (AF. *denzein*, *denezyn*, OF. *deinz*, Fr. *dans*, within, from Lat. *de*, from + *intus*, within). One who was born an alien (q.v.) to his adopted country, but who has been granted some of the privileges of citizenship. In England "denizen" signifies one who has been admitted to become a citizen by letters patent from the crown, his rights dating from the time when they were conferred; and he is distinguished from a naturalized citizen, whose rights are granted by Parliament and are retroactive, giving him the same status as if he were a natural-born citizen. A denizen in England is also under certain political disabilities as to holding office, and he is subject to certain taxes from which other citizens are exempt. He is said, therefore, to occupy a middle position between an alien and a natural-born or naturalized subject. In the United States the terms "denizen" and "naturalized citizen" are used synonymously, there being no distinction. Naturalization (q.v.) is held here not to be retroactive; but when one becomes a denizen or naturalized citizen, he has from the date of his admission to citizenship practically all the

rights and privileges of a natural-born citizen. The Constitution provides that no one not a natural-born citizen may become President, but otherwise there are no constitutional limitations on the rights of a naturalized citizen. See CITIZEN; NATURALIZATION; SUBJECT.

DENIZLI, *dén'iz-le'* (Turk. *deniz*, sea). A town of Asiatic Turkey, in the Vilayet of Smyrna, on the Smyrna-Dineir Railway (Map: Turkey in Asia, C 4). In its vicinity are situated the ruins of ancient Laodicea. The situation of Denizli amid beautiful gardens and vineyards at the base of the Baba Dag has earned it the title of the "Damascus of Anatolia." It has a bazar, khans, and leather-curing and manufacturing industries. Pop., about 20,000.

DENK, HANS (c.1495-1527). A German Anabaptist. He was born in Bavaria, studied at Ingolstadt, was proof reader in Basel, rector of a school at Nuremberg in 1523, and there met Thomas Münzer, and so first came in contact with Anabaptism, which he accepted with modifications. In consequence he was banished from the city, January, 1524, and forced upon that wandering life which he henceforth led until his death, in Basel, November, 1527. His writings are very scarce. He was essentially a mystic and, like his class, mingled truth and error. For his life, consult L. Keller (Leipzig, 1527).

DEN'MAN, THOMAS, BARON (1779-1854). An English jurist. He was born in London, educated at Cambridge, and was called to the bar in 1806. On the accession of George IV he was appointed Solicitor-General to the Queen, and in conducting her defense won a considerable reputation both as a lawyer and as a speaker, but earned the enmity of the King, who for some time thereafter opposed his advancement. In 1818 he was elected to Parliament, and took a seat with the Whig Opposition, serving there until 1826 and being returned again in 1830. In the latter year he was made Attorney-General, and two years later became Lord Chief Justice of the King's Bench. In 1834 he was raised to the peerage. He resigned the office of Chief Justice in 1850 and retired to private life. His character was marked by high moral and social virtues. As a jurist, he was especially interested in the subject of law reform and instituted important changes in the code. He also strove with great energy, both as a writer and as a judge, to effect the abolition of the slave trade.

DENMAN, WILLIAM (1870-). An American lawyer, born in San Francisco, Cal. A graduate of the University of California (1894) and of Harvard Law School (1897), he became a prominent member of the California bar. He defended the eight-hour law for women, was counsel in various important admiralty cases, and served as assistant professor of law and lecturer at the Hastings College of Law and the University of California. In 1908-10 he was chairman of a committee appointed by the mayor of San Francisco to report on causes of municipal corruption. A movement which he organized in 1908 to secure nonpartisan election of judges resulted in the passage of a law to this end in 1911. He also drafted a nonpartisan majority election law, which is now part of the San Francisco charter.

DEN'MARK. The smallest of the three Scandinavian kingdoms of Europe (Map: Eu-

rope, D 3, and special map). It comprises the northern portion of the Cimbrian peninsula, called Jutland, the Danish Archipelago east of the peninsula, the island of Bornholm, and the Faroe Islands, making a total area of 15,682 square miles. Not reckoning the Faroe Islands, it lies between lat. 54° 33' and 57° 45' N. It is almost surrounded by the sea, Jutland being connected with the Continent only at the southern frontier, in which place the peninsula is less than 40 miles wide.

Topography. The west and northwest coasts of Jutland, which are washed by the North Sea and the Skagerrak, are low and girt by dunes and sand bars. Behind the dunes there are several large lagoons or inclosed bays, but they are usually too shallow to serve as harbors. The north extremity of Jutland is formed by the Skagen, a long, curved sand spit. The east coast along the Kattegat lies at a somewhat higher level and is indented by a series of inlets (fjords) that penetrate deeply into the interior; Limfjord, the most northerly, reaches across the peninsula and communicates through a tortuous course with the North Sea. Some of the inlets may be entered by ships of light draft. Between the south of Jutland and the south extremity of Sweden are Fyn and Zealand, the largest islands of Denmark, dividing the outlet of the Baltic into three passages—the Little Belt, between Jutland and Fyn; the Great Belt, separating Fyn and Zealand; and the Sound between Zealand and Sweden. Both islands have an irregular and sandy coast line. The surface of Denmark is uniformly low. A ridge of hills crosses the middle portion of Jutland from the southern frontier to the Limfjord, of which the highest point, Himmelberg, near Aarhus, a little more than 500 feet, is not exceeded. The ridge constitutes the water parting between the North Sea, which receives the Stor Aa, the Lönborg Aa, and the Varde Aa, and the Kattegat, which receives the Guden Aa, the largest river of Denmark, with a length of about 80 miles. Many lakes, characteristic of glaciated areas, abound.

Climate. The climate of Denmark is like that of eastern Scotland, but it is somewhat warmer in summer and colder in winter. The mean temperature at Copenhagen is about 60° F. in summer and about 32° F. in winter. In general the islands have a milder climate than Jutland. In winter the sound and other channels are sometimes filled with drifting ice; the blockade, however, does not continue for any length of time. Heavy rains are frequent in autumn, and mists in summer, especially on the west coast of Jutland. The annual rainfall ranges from 21 to 27 inches.

Flora. The flora of Denmark includes many of the common European plants and a number of species peculiar to the moorlands. Formerly there were extensive forests of beech, but these trees are now practically limited to cultivated lands. Besides the beech the tree most commonly found is the oak. About 5 per cent of the total area is forested.

Fauna. The fauna has no noteworthy characteristics. Fishes and aquatic birds abound. Salmon are found in the Guden Aa and oysters in a few localities. In 1911 the value of the fish caught was \$4,193,000.

Geology. With the exception of Bornholm, which belongs physically to Sweden, the entire area of Denmark may be regarded as a continua-

tion of the plains of North Germany. The surface consists of boulder clay and sand, resting upon stratified rocks of generally Cretaceous age. The clay was deposited during the Pleistocene epoch by the Scandinavian ice sheet. West and north from Jutland there are large tracts of moorlands which yield peat, but no metallic ores occur in any part of the country. Bornholm is formed by Paleozoic and Mesozoic rocks and has the same geological structure as the southern part of Sweden. Kaolin and a poor grade of coal are mined on this island.

Agriculture. Denmark proper is essentially an agricultural country. Nearly 39 per cent of the population are engaged in agriculture. The laws forbid the uniting of small farms into large ones and favor the parceling out of landed estates. The peasant proprietors are consequently increasing both in number and importance. The division of the land into very small holdings is successfully associated with a well-developed system of coöperation, which enables small farmers to use the most improved and expensive machinery, etc. Tenants in good standing have absolute charge of their land. About 75 per cent of the total area of the country is productive land (not including woodland). In 1907, of the total area of 3,896,870 hectares, 1,122,761 were under cereals, 308,362 under roots, etc., 27,247 under other crops (excluding hay), 230,413 fallow, etc., 1,229,585 in herbage and pasture; of the remaining 978,502 hectares, 324,241 were woodland (including public parks), 382,450 were not utilized, and 56,459 were inland water. In 1912, 40,512 hectares were sown to wheat, yielding 983,875 metric quintals; rye, 276,009 hectares, 4,799,236 quintals; barley, 233,714 hectares, 5,439,031 quintals; oats, 402,939 hectares, 7,520,647 quintals; sugar beet, 30,300 hectares, 9,860,071 quintals. The production of raw sugar in 1912 was 1,530,000 quintals. (Hectare = 2.47 acres; quintal = 220.5 pounds.) Stock raising is an important industry. In 1910 horses numbered 535,018, cattle 2,253,982, sheep 726,829, goats 40,267, and swine 1,467,822.

Manufactures. The manufacturing industries are chiefly on a small scale. The industrial census of 1906 gives the number of establishments as 85,242, with a personnel of 317,086, of whom 208,444 were industrial laborers. Of these establishments but 1248 had between 21 and 100 hands, and only 218 over 100 hands each; 12,379 establishments, with 80,106 workers (out of the 208,444), were in Copenhagen. The principal manufactures are furniture, foodstuffs, articles of apparel, metal products, and porcelain. The textile industries are confined chiefly to the rural districts. Manufacturing is increasing in importance, partly in consequence of the industrial schools. Most of the important plants are in Copenhagen. In 1911 the distilleries in the whole country numbered 27, and their output of spirit (reduced to 100 per cent) amounted to 15,550,000 liters. In that year 1,115,000 hectoliters of excisable beer were produced and 1,550,000 hectoliters nonexcisable, 116,150 metric tons of sugar, and 35,400 metric tons of margarine. There is some manufacturing of machinery and also a little iron smelting. The industrial joint-stock companies of Denmark are a significant feature in its manufacturing development.

Transportation and Communication. Most of the towns of Denmark are situated on the coast or on navigable rivers. Steamboats ply

constantly between the islands. At the end of 1911 there were, outside of Copenhagen, 4344 miles of road and over 22,500 miles of byways. The first railway within the present confines of the country (Copenhagen-Roskilde) was constructed by a private company and opened for traffic in 1847. Prior to 1880 the state railway lines were confined to the mainland and the island of Fyn, while private companies controlled all lines on the islands of Seeland, Lolland, and Falster. In 1880 an Act was passed authorizing the acquisition of the Seeland lines. At the end of 1911 the length of railway open to traffic was 3691.3 kilometers (2293.7 miles), of which 1922.8 kilometers were owned by the state and 1768.5 by private companies. The cost of the state lines to the end of the fiscal year 1912 is stated at 270,649,217 kroner. (Krone = \$0.268.) In 1913 the state telegraph lines had a length of 3621 kilometers, with 13,005 kilometers of wire and 1017 offices; there were 8 wireless telegraph stations besides 19 on board ship.

The merchant marine (including vessels of over 4 tons' register) on Jan. 1, 1913, comprised 642 steamers, of 415,436 tons' register, and 2062 sail, of 91,188 tons; total, 3564 vessels, of 522,143 tons. In the foreign trade there entered at Danish ports, in 1912, 38,667 vessels, of 4,387,258 tons (steam, 23,074 vessels, of 3,741,958 tons), and cleared 39,339 vessels, of 1,623,077 tons (steam, 23,578, of 1,399,639 tons).

Commerce. Although the foreign trade has not grown at so rapid a rate as that of some other countries, Denmark has had, nevertheless, a fair share in the modern commercial expansion of the world. In 1875 imports for consumption and exports of domestic produce (i.e., the special trade) amounted to \$62,617,500 and \$46,122,800 respectively; in 1890, \$82,276,000 and \$32,658,400; in 1900, \$111,541,600 and \$75,549,200; in 1905, \$129,430,600 and \$104,761,200; in 1910, \$154,680,500 and \$130,080,200; in 1912, \$197,962,200 and \$159,921,800. The development in both import and export values has been notable since 1900. The leading imports are cereals, oil cake, metals and hardware, textile manufactures, coal, wood manufactures, and timber. The principal exports are as follows (the values being for 1912): butter, \$51,211,584; meat (largely bacon), \$47,249,792; live stock, \$14,521,580; eggs, \$7,289,868; hides, 4,168,740. The general commerce (which includes, besides the special trade, imports of foreign merchandise for reexportation) in 1912 amounted to \$219,093,216 for imports and \$182,797,976 for exports. In the general commerce of 1912 imports from and exports to the United Kingdom were valued at \$36,417,716 and \$9,999,872 respectively; Germany, \$84,217,928 and \$48,681,128; Sweden, \$18,508,080 and \$8,938,336; Norway, \$2,456,488 and \$4,968,988; Russia, \$15,054,900 and \$4,380,996. Imports from North America were \$19,474,220, while the exports thereto were only \$3,118,716. The largest share of the imports comes from Germany, and that of the exports goes to the United Kingdom. Imports from and exports to the United States in 1912 amounted to \$15,767,348 and \$2,832,418.

Banks. The only bank of issue is the National Bank at Copenhagen (established 1818); in 1912 its assets and liabilities balanced at 208,205,596 kroner. At that time there were 135 other banks, for general commercial and industrial purposes. The assets and liabilities

of the 136 banks (including a number of affiliated institutions) balanced at 1,440,111,119 kroner, of which 1,068,892,157 kroner represented 12 banks at the capital (i.e., Copenhagen with Frederiksberg). The note issue amounts to about 154,000,000 kroner. At the end of the fiscal year 1911 there were 521 savings banks, with 1,353,384 depositors and deposits amounting to 803,007,171 kroner. The number of deposits was equal to nearly 49 per cent of the number of inhabitants; the average deposit was about 593 kroner, or \$159.

Government. Denmark is a constitutional monarchy, hereditary in the male line of the house of Schleswig-Holstein-Sonderburg-Glücksburg. The constitution bears date of June 5, 1849, revised July 28, 1866.

The lawmaking power is vested in the king and in the Rigsdag, or parliament. The Rigsdag consists of the Landsting, or upper house, and the Folkething, or popular chamber. The Landsting is composed of 66 members, of whom 12 are appointed for life by the crown, and the remainder are chosen for a term of eight years, partly by the representatives of the highest taxpayers in the towns and rural districts and partly by the representatives of the people at large. The Folkething is composed of 114 deputies, elected for three years by all male citizens of 30 years or over not in receipt of public charity or engaged in menial household service and resident for a year in the district in which they enroll. While 30 is the age of franchise, 25 is that of eligibility to either house of parliament. Legislation may be initiated in either house, but financial bills must be submitted in the first instance to the Folkething, and only on the initiative of the executive. In practice the Landsting enjoys a very large degree of influence, owing to its feature of comparative permanency; and in conjunction with the king, who wields an absolute veto on legislation, it is frequently in the position of directing the action of parliament. The executive power is vested in the king, who acts through a council of nine responsible ministers, who preside over the departments of Foreign Affairs, Finance, Interior, Justice, National Defense, Public Instruction and Worship, Agriculture, Public Works, and Commerce and Navigation. There is also a minister for Iceland.

Justice is administered in the first instance by the judges of the hundreds in the rural communities and by the city magistrates in the urban districts. Appeals from such courts lie to the superior courts of Viborg and Copenhagen, and in the last resort to the Supreme Court of 24 judges (Højesteret) at Copenhagen. Together with four judges especially appointed by the Landsting, the Supreme Court sits as a tribunal for the cases of impeached ministers.

Army and Navy. The Danish army is raised by conscription from among all citizens above the age of 20. Substitution is not permitted. The terms of service are eight years with the regular army and its reserve and eight years with the supplementary reserve. The standing army in 1913 approximated 975 officers and 13,200 men. The war footing of the nation is placed at about 84,000 men. The infantry is armed with the Krag-Jørgensen rifle, and the cavalry with the Remington carbine. The field artillery is armed with a Krupp gun firing a 14.88-pound shell. The navy is maintained only for purposes of coast defense. It consists of

several monitors, torpedo gunboats, torpedo boats, submarines, etc.

Finance. The standard of value is gold. The monetary unit is the krone (crown), par value 26.799 cents. Revenue and expenditure in the fiscal year 1910 were 81,948,924 and 113,120,921 kroner respectively; in 1911, 90,903,801 and 119,902,100; in 1912, 101,404,844 and 118,754,904. The budget for the fiscal year 1914 showed estimated revenue and expenditure of 112,214,910 and 104,804,334 kroner respectively. Indirect taxes (customs and excise) were estimated at about 60,000,000 kroner and direct taxes at about 35,000,000. A considerable reserve fund is maintained for emergency. At the end of the fiscal year 1913 the public debt was: foreign, 272,287,250 kroner; interior, 84,352,218; guaranties, 1,401,455; total, 358,040,923. Service of the debt (1914 budget), 12,337,162 kroner.

Colonies. Iceland, Greenland, the Faeroes, and the West Indian islands of St. Croix, St. Thomas, and St. John belong to Denmark. The Faeroes are not a colony, but form a department, or amt, of the kingdom and are represented in the parliament; however, their area (540 square miles) and population (18,000 in 1911) are not included with Denmark proper. Iceland has a parliament of its own. The area of Iceland is 40,457 square miles; its population in 1911 was 85,188. Greenland, whose commerce is a state monopoly, is directly under the home government. The area of the island of Greenland is not known with accuracy, but may be placed at about 889,400 square miles; the administered area, in the southwest part, is estimated at 34,015 square miles: pop., 1911, 13,462. The Danish West Indies have consultative representation in the administration directed by the home government. Their area is 139 square miles; pop., 1911, 27,104. See ICELAND; GREENLAND; ETC.

Population. The population of Denmark proper in 1801 is stated at 929,001; in 1840, 1,269,075; in 1880, 1,969,039; in 1890, 2,172,380; in 1901, 2,449,540; in 1906, 2,588,919; in 1911, 2,757,076. By insular and mainland divisions the area and the population in 1901 and 1911 (census of February 1) are shown in the following table:

	Sq. miles	Pop. 1901	Pop. 1911
Islands			
Zealand	2,895	960,053	1,096,897
Bornholm	227	40,889	42,885
Lolland-Falster	692	105,021	115,658
Fyn	1,341	279,755	303,179
Total islands	5,155	1,385,748	1,558,619
Jutland:			
Southeast Jutland	2,827	430,549	482,264
Southwest Jutland	4,144	313,764	364,620
North Jutland	2,920	319,479	351,573
Total Jutland	9,891	1,063,792	1,198,457
Denmark proper	15,046	2,449,540	2,757,076
Faeroes	540	15,230	18,000
Total	15,586	2,464,770	27,75,076

The following table shows the population of the capital (Copenhagen with Frederiksberg), of other towns, and of the rural communes. The more rapid urban growth, as compared with the rural, is marked.

YEAR	Capital	Other towns	Rural communes	Total
1870	198,169	245,298	1,341,274	1,784,741
1890	359,813	362,431	1,450,136	2,172,380
1901	476,806	482,099	1,490,635	2,449,540
1906	514,134	508,200	1,565,585	2,588,919
1911	559,398	550,328	1,647,350	2,757,076

Of the total population in 1911, 1,337,900 were male and 1,419,176 female. In respect of religion the population is remarkably homogeneous, the number returned in 1911 as of the national church (Lutheran) being 2,715,187. Roman Catholics numbered 9821, Anabaptists 5664, and Methodists 4284. The inhabitants born in Denmark numbered (1911) 2,655,522: Germany, 34,535; Sweden, 33,312; Norway, 4696. In 1912 marriages numbered 20,413; births and deaths (each including stillbirths), 76,405 and 38,170 respectively; excess of births, 38,235; emigrants, 8636. Population of the larger cities and towns in 1911: Copenhagen, 462,161; Frederiksberg (suburb of Copenhagen), 97,237; Aarhus, 61,755; Odense, 42,237; Aalborg, 33,449; Horsens, 23,843; Randers, 22,970; Esbjerg, 18,208; Vejle, 17,261; Fredericia, 14,228; Kolding, 14,219; Helsingør, 13,783; Svendborg, 12,667.

The Danes are a Teutonic people of the Scandinavian group. Height, 1.685 meters; hair, wavy, light brown or chestnut; eyes blue; complexion pale white, swarthy, or very light brown. Primary education is free and compulsory between the ages of 7 and 14 and is very thoroughly diffused. There are numerous secondary schools. Denmark has one university, that of Copenhagen (about 3000 students). There are also an agricultural and veterinary college, 19 agricultural or horticultural schools, the Royal Academy of Art (founded in 1754), the Polytechnic Institute, a college of pharmacy, and about 100 technical and commercial institutions.

History. Of the primitive history of Denmark little is known. The kitchen middens and other primitive remains indicate the early presence of paleolithic man in the Danish peninsula. The sagas hand down myths and traditions of later but still early ages, when the original inhabitants had been crowded out by wandering tribes of Germanic stock, and Jutland and the islands had become the homes of Saxons, Angles, and Jutes. This was probably completed about the second century of our era, but was followed by an invasion of the Danes in the fifth and sixth centuries. Less influenced than the other Teutonic peoples by the Romans, the inhabitants in the Scandinavian countries developed a striking and characteristic civilization, marked by a warlike and adventurous spirit, which sent them as Vikings and conquerors over all Europe and as far as America. Christianity was preached by Ansgar in Denmark in the ninth century, but the conversion of the land dates from the second half of the tenth century. After the ninth century we find a united Danish kingdom growing out of the petty principalities into which the country was divided. We hear of Danish kings as early as the eighth century, but know little of them; in the tenth century Gorm the Old is said to have been a bitter opponent of Christianity; but the first Danish ruler of prominence was Svend (Sweyn) I, of the Forked Beard (985 or 986-1014), a redoubtable sovereign who for a brief

period imposed his yoke upon England. Svend's son, Knut or Canute (died 1035), King of England and Denmark (see CANUTE), was a really great sovereign, under whom the conversion of the Danes to Christianity was completed, and much was done to civilize the kingdom and bring it into order. After his death the northern empire which he had created fell apart, and the Odinic dynasty of the Skjoldungs became extinct in 1047.

Svend Estridsen, son of Knut's sister, now ascended the throne. Internal dissensions and external wars led here as elsewhere to the introduction of a feudal system. A new era of brilliant achievements began with Valdemar I the Great (1157-82) and continued under Knut VI (1182-1202) and Valdemar II the Victorious (1202-41). These kings extended the conquests of Denmark far into German and Wendic lands and made the Baltic little more than a Danish sea. The jealousy of the German princes and the treachery of his vassals combined to rob Valdemar II of these conquests. His death in 1241 was followed by a century of anarchy, during which the kingdom was brought near to destruction under the vicious rule of his sons and grandsons. Under Valdemar III (1340-75), the last of the Estridsen line, Denmark recovered for a time the conquests of the elder Valdemars, and the national laws were collected into a well-digested code. From 1375 until 1412 Valdemar's daughter, the great Margaret, ruled Denmark, at first as Regent for her young son Olaf and after his death as Queen. Denmark, Norway, and Sweden were united under her sovereignty, and this was confirmed in 1397 by the act known as the Union of Kalmar. Margaret's successor, Erik (1412-39), the son of her niece, undid her work with fatal rapidity, lost his triple kingdom, and died in obscurity. After the short reign of his nephew, Christopher of Bavaria, the Danes, on the death of the latter in 1448, reasserted their ancient right of election to the throne and chose for their King Christian of Oldenburg, a descendant of the old royal family through his maternal ancestress, Richiza, the great-granddaughter of Valdemar II. Christian I was the father of the Oldenburg line, which continued unbroken till the death of Frederick VII in 1863. Christian was chosen ruler by the estates of Schleswig and Holstein in 1460, promising for his successors that they should forever leave the two lands united. As rulers of Holstein (which was included in the Holy Roman Empire), the kings of Denmark became members of the Germanic body. Christian I's reign was followed by half a century of continuous warfare and anarchy in Scandinavia. The tyranny of Christian II (1513-23) cost him his throne. His bloody atrocities in Sweden were followed by the successful vindication of the independence of that country by Gustavus Vasa. Christian's subjects chose his uncle, Frederick I (1523-33), to be their King, while Sweden was forever separated from Denmark. Under Christian II Denmark first began to enter into extensive treaty relations with other European states. Christian III (1534-59), in whose reign the Reformation was established, united the Schleswig-Holstein duchies in perpetuity to the crown. His partition of the greater part of these provinces among his brothers became a source of much mischief. Frederick II (1559-88) further complicated matters in regard to the duchies by making additional partitions in favor of his

brother, the founder of the Holstein-Sönderburg family. He was succeeded by Christian IV (1588-1648), who was one of the ablest of Danish rulers, although his foreign wars were disastrous, while his liberal and wise internal policy was cramped in every direction by the nobles. He fought for Protestantism in Germany in the Thirty Years' War and was utterly defeated. Towards the end of his reign he engaged in an unsuccessful war against Sweden, which now became the dominant power on the Baltic. In the reign of Christian's son, Frederick III (1648-70), Denmark had to surrender all her possessions in the Swedish portion of the Scandinavian peninsula.

In 1660 Frederick III, with the assistance of the clergy and the burghers, who had joined him in opposing the pretensions of the nobles, declared the crown hereditary and the royal authority absolute and ushered in a new régime. The power of the nobility was reduced, but the peasantry and burghers profited little by the change. Many improvements were, however, effected in the mode of administering the laws, and the Danish kings, although autocrats, exercised a mild rule. The abolition of serfdom was begun in 1767 by Christian VII (1766-1808), but was not finally completed till 20 years later; it was extended to the Schleswig-Holstein duchies in 1804. The misfortunes due to the relations maintained by Denmark with Napoleon brought the country to the verge of ruin, by plunging it into war with Sweden, England, Russia, and Prussia, and although it speedily rallied from the losses inflicted in 1801 by the battle of Copenhagen, the fresh rupture with the Allies, which ended in the compulsory surrender to the English of the entire fleet, after the destructive bombardment of Copenhagen (September, 1807), completely paralyzed the nation. By the Peace of Kiel in 1814 Frederick VI of Denmark (1808-39) was compelled to cede Norway to Sweden. The discontent that had long been prevailing in Schleswig and Holstein developed after 1830 into mutual animosity between the Danish and German population. The anticipated failure of heirs to the throne complicated the questions at issue, and in 1848, immediately after the succession of Frederick VII, the German element in Schleswig and Holstein, being encouraged by the Frankfurt Parliament (which voiced the revolutionary movement in Germany), and perhaps still more by Prussia, rose in arms against Denmark. After alternate hostilities and armistices the first Schleswig-Holstein War, in which the Danish troops fought bravely against the forces of Prussia and other German states and of the rebellious duchies, terminated in 1851, Prussia having abandoned the cause of the duchies, and Austria and Prussia having intervened to restore the former order. The liberal constitution which Frederick VII had in the meantime granted to his subjects did not reconcile the Germans in Schleswig-Holstein.

On the death, in 1863, of Frederick VII, Christian of Schleswig-Holstein-Sönderburg-Glücksburg ascended the throne under the title of Christian IX (q.v.) in conformity with the act known as the Treaty of London (1852), by which the European Powers had settled the succession to the Danish crown on him and his descendants by his wife, Princess Louise of Hesse-Cassel, niece of King Christian VIII of Denmark. With Frederick VII the direct Oldenburg line had expired, and at his death the ques-

tion of the succession to the duchies acquired an importance which it had never before possessed. Schleswig and Holstein declared for Prince Frederick of Augustenburg, a scion of a branch of the Oldenburg line, and appealed to the Germanic Confederation for support. The Germanic Diet sent an army into Holstein. Prussia and Austria had in the meantime concerted with each other to take the settlement of the Schleswig-Holstein affair into their own hands. Christian IX, reflecting upon the way in which the cause of the duchies had been betrayed by the German Powers in the War of 1848-51 and relying upon the support of England, allowed himself to be dragged into a war single-handed with Prussia and Austria, whose forces advanced into Schleswig in February, 1864. After a brave but utterly futile attempt at resistance the Danes saw their country overrun by the troops of Prussia and Austria, and by the Treaty of Vienna (Oct. 30, 1864) were forced to submit to the terms exacted by their powerful foes, and resign not only Holstein and Lauenburg, but the ancient crown appanage of Schleswig into the hands of the two Powers. As a result of the War of 1866 the duchies became permanently possessions of Prussia. The record of political occurrences in Denmark after 1864 was mainly concerned with the struggle between the Conservative and Liberal parties, the rise of a powerful Democratic party, and the development of the system of parliamentary government. In 1904 a special minister for Iceland resident at Reykjavik was created. On Jan. 29, 1906, the aged Christian IX died. He was succeeded by his son Frederick VIII (q.v.), whose second son Charles had been elected in the preceding year to the throne of Norway as Haakon VII. The new King proved immensely popular with his people and by his unpretentious and democratic ways stemmed the growing tide of Danish radicalism. On May 14, 1912, while visiting Hamburg incognito, he fell suddenly dead, his body being carried to the morgue as an unrecognized man. His son succeeded as Christian X and immediately found himself face to face with a Folkething that in 1913 passed a woman's suffrage bill and a further act depriving the King of his right of nominating certain members of the national legislature.

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DENNER, BALTHASAR (1685-1749). A German portrait and miniature painter. He was born at Hamburg and studied in Altona under Amann, in Danzig and afterward at the Berlin Academy. He is said to have painted good portraits when only 14 years of age. Rapidly acquiring reputation, he was invited to several European courts and painted the portraits of many princes and other distinguished persons of his time, including the Duke of Holstein-Got-

torp, later Czar Peter III, King Christian VI of Denmark (Museum, Christiania), the poet Hagedorn, and many of the aristocracy of England, where he lived seven years. His chief peculiarity consisted in the fineness of his mechanical finish, which extended to depicting even the almost invisible furze of hair growing on smooth skin. He is particularly noted for his heads of old men and women. The Emperor Charles VI paid 4700 florins for a "Head of an Old Woman" by this artist. This and its companion piece, the "Head of an Old Man," are in the Vienna Museum. Specimens of his art are to be found in most of the principal galleries in Europe, especially at St. Petersburg.

DENNERY, dè'n'rè, or **D'ENNERY, ADOLPHE PHILIPPE** (1811-99). A French dramatist of versatile facility, born in Paris. He wrote or collaborated in nearly 200 plays. The more noteworthy of his dramas are: *L'Honneur de ma fille* (1835); *La perle de Savoie* (1842); *La Case d'Oncle Tom* (1853), a French version of the famous American novel; *Les deux orphelins* (1873), which as *The Two Orphans*, played for many years by Kate Claxton, has been exceedingly popular in the United States. Consult Jules Lemaitre, *Opinions à répandre* (Paris, 1900).

DENNETT, RICHARD EDWARD (1857-). An English writer on the peoples of Africa. He was born in Valparaiso, the son of an English clergyman, and was educated at Marlborough College. At the age of 18 he became a clerk in a mercantile house and in 1879 went to Africa on business. About 1886 he began to attack the administration of the Congo Free State and soon afterward started a manuscript newspaper called the *Congo Mirror*. His agitation led to the organization of the Congo Reform Association. In 1902 he joined the Nigerian Forest Service, of which he became deputy chief conservator. His valuable books on native life in Africa include: *Seven Years among the Fjort* (1887); *At the Back of the Black Man's Mind* (1907); *Nigerian Studies, or the Religious and Political System of the Yoruba* (1910); *West African Categories* (1912).

DENNEWITZ, dèn'e-vits. A small village in the Province of Brandenburg, Prussia, 42 miles south-southwest of Berlin. Here was fought, on Sept. 6, 1813, a battle between 70,000 French, Saxons, and Poles, commanded by Marshal Ney, and 50,000 Prussians, under Generals Bulow and Tauenzin. The fighting was obstinate to the last degree, and both armies more than once drove each other from their positions. Ney's army was finally defeated. The French lost 15,000 killed, wounded, and prisoners, and 43 pieces of cannon. The Prussians lost about 9000. The most important feature of this victory to the Prussians was that most of their troops were *Landwehr* ('militia'), for whom Napoleon had expressed the utmost contempt, designating them as "rabble."

DENNEY JAMES (1856-). A Scottish Free church theologian and New Testament scholar. He was born in Paisley and was educated at Glasgow University and at the Free Church College, where, after 11 years (1886-97) as pastor in Broughty Ferry, he became professor of New Testament language, literature, and theology. His exegetical and theological works include: *The Epistle to the Thessalonians* (1892) and *Second Corinthians* (1894) in the "Expositor's Bible"; *Studies in Theology*

(1895); *The Epistle to the Romans* (1900) in "Expositor's Greek Testament," probably his most important commentary; *The Death of Christ* (1902) and *The Atonement and the Modern Mind* (1903), perhaps his greatest theological work; *Jesus and the Gospel* (1909); *The Way Everlasting* (1911), a volume of sermons.

DENNEY, JOSEPH VILLERS (1862-). An American rhetorician and university dean, born at Aurora, Ill., where, after graduating from the University of Michigan in 1885, studying law, and being engaged in newspaper work, he was principal of the high school (1888-90). He taught for a year at the University of Michigan and then went to Ohio State University to be associate professor of rhetoric (1891-94), professor of rhetoric and English literature (1894-1904), dean of the College of Arts, Philosophy, and Science (after 1901), and professor of English (after 1904). He also lectured at Columbia University in the summers of 1908 and 1911. Besides contributions to various journals, his writings include: *Burke's Conciliatory Speech* (1898); *American Public Addresses* (1909); *Four Idylls of the King* (1911); *Washington, Webster, Lincoln* (1911); *Argumentation and Debate* (1911). In collaboration with Fred N. Scott he also wrote *Paragraph Writing* (1893); *Composition-Rhetoric* (1897); *Elementary English Composition* (1900); *Composition-Literature* (1902), and with Silas B. Tobey, *English Grammar, Designed for Intensifying the Study of English Grammar in Grammar Grades* (1913).

DENNIE, JOSEPH (1768-1812). An American journalist, born in Boston, Mass. He graduated at Harvard in 1790, studied law at Charlestown, N. H., and was admitted to the bar. From 1795 he devoted himself mainly to literature and journalism. He edited the *Farmers Weekly Museum*, in Walpole, N. H., one of the first experiments in departmental journalism. He attained considerable reputation also as an essayist through *The Lay Preacher* (1796). In 1798 Dennie was nominated for Congress, but was defeated, and afterward went to Philadelphia as private secretary to Timothy Pickens, then Secretary of State (1799). Here he edited *The United States Gazette* and afterward established and conducted until his death *The Portfolio* (1801). This weekly became a monthly in 1806 and enjoyed high reputation. Its contributors included Brockden Brown and J. Q. Adams. Dennie wrote under the pseudonym of Oliver Old School, and he performed some service in keeping the cause of letters alive in America at a very gloomy period. His Addisonian compositions have long remained unread, but his *Portfolio* is of considerable value to students of the period.

DENNIS, FREDERIC SHEPARD (1850-). An American surgeon, born in Newark, N. J. After graduating from Yale University in 1872 and from Bellevue Hospital Medical College (New York University) in 1874, he studied also in England at the Royal College of Surgeons, by which he was elected a fellow in 1899. He became consulting surgeon to several hospitals in New York and vicinity, and from 1898 to 1910 he served as professor of surgery in Bellevue Hospital Medical College. In 1894 he was president of the American Surgical Association. He edited the *System of Surgery* (4 vols., 1895-96).

DENNIS, JAMES SHEPARD (1842-1914). An

American Presbyterian missionary. He was born at Newark, N. J., graduated at Princeton College in 1863 and Theological Seminary in 1867, and was missionary in Syria from 1868 to 1891, during which time he was principal and professor of theology in the theological seminary in Beyrout (1873-91). Besides several theological treatises in Arabic, he published *Foreign Missions after a Century* (New York, 1893); the very elaborate work, *Christian Missions and Social Progress* (vol. i, 1897; vol. ii, 1899; vol. iii, 1906); *Centennial Survey of Foreign Missions* (1902); and *The New Horoscope of Missions* (1908). He was also joint editor of a *World Atlas of Christian Missions* (1911).

DENNIS, JOHN (1657-1734). An English critic and dramatist. He was born in London and graduated at Cambridge in 1679. After further study and foreign travel he devoted himself to literature. His play, *Liberty Asserted* (1704), was received with some favor. He was best known, however, as a political and critical pamphleteer and satirist. He is one of the best-abused men in English literature. Swift lampooned him, and Pope assailed him in the *Essay on Criticism*, and finally "damned him to everlasting fame" in the *Dunciad*. Of his critical writings, the chief is *The Advancement and Reformation of Modern Poetry* (1701). Consult H. G. Paul, *John Dennis: His Life and Criticism* (New York, 1911).

DENNIS, LOUIS MUNROE (1863-). An American chemist, born in Chicago. He graduated from the University of Michigan (Ph.B., 1885; B.S., 1886) and after further study abroad returned to teach chemistry at Cornell University. There he was advanced to a professorship in 1900 and to be head of the department of chemistry in 1903. Besides contributions to American and German chemical journals, he translated Walther Hempel's *Methods of Gas Analysis* (1902; new ed., 1913) and wrote *Chemical Problems in Inorganic Chemistry* (1890); *Elementary Chemistry* (1902) and *Laboratory Manual of Elementary Chemistry* (1902), with Frank W. Clarke; *Manual of Qualitative Analysis* (1902; rev. ed., 1912), with Theodore Whittlesey.

DENNIS, WILLIAM CULLEN (1878-). An American lawyer, born at Richmond, Ind. He graduated from Earlham College in 1896 and from Harvard Law School in 1901. Although admitted to the bar, he did not for some years take up the practice of law, but taught this subject at the University of Illinois (1902-04), Stanford University (1904-05), Columbia (adjunct professor, 1905-06), and George Washington University (professor, 1906-09). From 1906 to 1910 he was also assistant solicitor of the United States Department of State; he represented the United States in the matter of the Venezuela Arbitration, before The Hague Tribunal (1909-10) and in the Chamizal Arbitration with Mexico, before the International Boundary Commission (1910-11); and he acted as secretary to the Chief Justice of the United States in the Panama-Costa Rica Boundary Arbitration. He took up private law practice in 1911 at Washington, D. C.

DENNISON, A village in Tuscarawas Co., Ohio, 100 miles northeast of Columbus, on the Pittsburgh, Cincinnati, Chicago, and St. Louis Railroad and on the Panhandle Ohio Canal (Map: Ohio, H 5). The village contains a hospital and public library and has railway work-

shops and sewer-pipe works. Under the Ohio code in 1902 the government of Dennison is vested in a mayor and a unicameral council. Pop., 1900, 3763; 1910, 4008.

DENNISON, WALTER (1869-). An American Latin scholar, born at Saline, Mich. He graduated in 1893 from the University of Michigan, where, after studying at the University of Bonn and at the American School of Classical Studies, Rome, he was instructor (1897-99) and junior professor of Latin (1902-10). He also held professorships at Oberlin College (1899-1902) and at the American School of Classical Studies, Rome (1908-09). In 1910 he became professor of Latin and Greek at Swarthmore College. Besides revising Kelsey's *Topical Outline of Latin Literature* (1899) and Frieze's *Virgil's Æneid* (1902), he is co-author with John C. Rolfe of *A Jumor Latin Book* (1898; rev. ed., 1911), and he also edited *Livy, Book I, and Selections from Books II-X* (1908).

DENNISON, WILLIAM, JR. (1815-82). An American politician. He was born in Cincinnati, graduated at Miami University in 1835, and practiced law until 1848, when he was elected to the State Legislature. He was Governor of Ohio from 1860 to 1862 and in answer to a call for 11,000 troops raised more than 30,000. From 1864 until his resignation in 1866 he was Postmaster-General in the cabinets of Presidents Lincoln and Johnson. One of the earliest prominent politicians who joined the Republican party, in 1864 he was chairman of the Republican National Convention. He was a benefactor of Dennison University (Granville, Ohio).

DEN'NY, SIR ARCHIBALD (1860-). A British marine engineer, born in Dumbarton, and educated there, at the Ecole Cantonal of Lausanne, and the Royal Naval College, Greenwich. He worked in the Leven shipyard and in 1883 joined the firm of William Denny & Brothers, prominent at Dumbarton since the middle of the century. He is an influential member of the Institution of Naval Architects and served on important committees of the British Corporation for the Registration of Shipping. He wrote professional papers for the Institution of Naval Architects.

DENNY, GEORGE HUTCHESON (1870-). An American Latin scholar and university president, born in Hanover Co., Va. He graduated from Hampden-Sidney College in 1891 and received the degree of Ph.D. from the University of Virginia in 1896, was professor of Latin and German at Hampden-Sidney for three years, and was then called to Washington and Lee University to be professor of Latin, acting president, and (1902-11) president. In 1911 he became president of the University of Alabama. He was president of the Southern Association of Colleges and Preparatory Schools (1905) and of the Coöperative Educational Association of Virginia (1903-12) and chairman of the Virginia State Board of Charities and Corrections (1908-11). He was also chosen (1905) a trustee of the Carnegie Foundation for the Advancement of Teaching. He edited *Cicero's Letters* (1901), contributed "The South in the Building of the Nation" in the *Library of Southern Literature*, and wrote *The Subjunctive Sequence after Adjective and Substantive Predicates and Phrases* (1896).

DENON, de-nôn' DOMINIQUE VIVANT, BARON

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(1747-1825). A French draftsman, art collector, and writer. He was born at Givry, near Châlons-sur-Saône, Jan. 4, 1747, and came early to Paris. While studying law, he wrote extensively, studied drawing with Noël Hallé, and became a great favorite in aristocratic society. Louis XV made him an attaché to the embassy at St. Petersburg and afterwards Ambassador to Switzerland. Here he repeatedly visited Voltaire at Ferney and painted his portrait and made the drawing "Déjeuner de Ferney" after which the well-known print was engraved. During his seven years' stay with the French embassy in Naples he collected works of art, reproduced the old masters, etched portraits of his contemporaries, and in conjunction with the Abbé Saint-Non published the *Voyage pittoresque de Naples et de Sicile* (1788). He returned to France during the Revolution and was saved from the guillotine by the painter David, for whom in gratitude he etched the "Oath of the Jeu de Paume." He was chosen by Napoleon to accompany the expedition to Egypt in the capacity of a savant and in 1802 published his *Voyage dans la Basse et la Haute Egypte*, the engravings of which are very correct. Napoleon made him inspector general of museums, in which capacity he showed great ability. He accompanied the Emperor on various subsequent expeditions and suggested to him what art treasures of the conquered cities would be most suitable for the Louvre. After the restoration of the Bourbons he was dismissed from his office. The remaining years of his life were occupied in arranging his private collection and designing the illustrations for a history of art the text of which was furnished by Amaury Duval and published in 4 vols. (1829), under the title *Monuments des arts du dessin chez les peuples tant anciens que modernes*. Denon himself executed more than 300 etchings, which were published in *L'Œuvre originale de Vivant Denon* (1872-73) with introduction by La Frizelière. He designed most of the Napoleonic medals and coins and was one of the first to introduce lithography into France.

DENOTATION (from Lat. *denotare*, to mark out, from *de* + *nota*, mark). In logic, the group of objects of any one of which any term with a definite meaning can be predicated. Thus, every individual horse, past, present, and to come, is part of the denotation of the term "horse." Denotation and connotation (q.v.) are said to vary inversely, because, in general, with the increase of attributes in the connotation, the objects in the denotation are reduced. The number of bay horses is smaller than the number of horses in general; but the number of qualities connoted by "bay horse" is larger than that connoted by "horse." A particular color is included in the former connotation which is not included in the latter. Synonyms of denotation are extension, sphere, breadth. See LOGIC.

DÉNOUEMENT, dá-nōō'mān' (Fr., an un-knotting). In fiction, a term generally applied to the termination or catastrophe of a play or romance. More strictly speaking, it designates the train of circumstances unraveling the plot and hastening the catastrophe. A good dénouement in a novel or play should follow naturally from the plot without being so obvious as to be easily anticipated.

DENS, PETER (1690-1775). A Roman Catho-

lie theologian, born at Boom, in Belgium. He was reader in theology at Mechlin for 12 years and president of the College of Mechlin for 40 years (1735-75). He was also canon, penitentiary, synodical examiner, and archpriest of St. Rombold's—the metropolitan church at Mechlin. The work by which he is best known is the *Theologia Moralis et Dogmatica* (new ed., 8 vols., Dublin, 1832), published under his name in 1777. It is a systematic exposition and defense—in the form of a catechism—of every point of ethics and doctrine maintained by Roman Catholics and has been extensively adopted as a textbook in their colleges. The casuistical parts of the work have been severely criticized by Protestant moralists and were translated in a condensed form by J. F. Berg (Philadelphia, 1840).

DEN'SITY. See SPECIFIC GRAVITY; MOLECULES—MOLECULAR WEIGHTS; VAPOR.

DENT, FREDERICK TRACY (1820-92). An American soldier, born in White Haven, Mo. He graduated at West Point in 1843, was assigned as brevet second lieutenant to the Sixth Infantry, served in the Southern campaign during the Mexican War, and was brevetted first lieutenant and captain for gallant and meritorious conduct at Contreras and Churubusco and at Molino del Rey respectively. He served for 16 years on frontier duty, taking part in the Yakima expedition, and in 1863 was promoted to be major and was stationed in New York to suppress anticipated riots. In 1865 he was brevetted brigadier general of volunteers and in 1866 was made brigadier general of volunteers. In 1873 he served on the staff of the general in chief. He commanded Fort Trumbull, Conn., in 1875 and the post of St. Augustine in 1881. He retired in 1883. His sister Julia married his West Point classmate U. S. Grant and became the mother of Frederick Dent Grant.

DENT, JOHN CHARLES (1841-87). A Canadian journalist and historian. He was born at Kendal, England, was brought by his parents to Ontario during infancy, and was educated at the public schools. He studied law and was called to the bar in 1865, but after practicing his profession for a brief period went to England and became an editorial writer on the *Daily Telegraph*. In 1867 he returned to America and did newspaper work in Boston for three years and in 1870 went to Toronto to join the editorial staff of the *Globe*. He relinquished journalism after a few years to devote himself to historical investigation. His works are: *The Canadian Portrait Gallery* (1880), a series of biographical and historical studies which he edited and mostly wrote; *The Last Forty Years: Canada since the Union of 1841* (1881); *Rev. Henry Scadding: A Memorial Volume* (1884); *The Story of the Upper Canada Rebellion* (1885-86). In literary style, grouping of events, and political analysis Dent's books are a distinct advance beyond histories of Canada previously published in English. His writing is brilliant, lucid, forceful; his method such as to leave a clear and abiding sense of the relative importance of different phases of Canadian development. He was a painstaking and conscientious investigator, fearless in his conclusions, and his treatment of the political crises between 1841 and 1880 is, on the whole, impartial. This can scarcely be said of his estimate of the two leading characters in

the Upper Canada Rebellion of 1837-38. He was biased against William Lyon Mackenzie (q.v.) and unduly praised John Rolph (q.v.); nevertheless the main features and issues of that contentious period are faithfully delineated. Consult: Marquis, "English-Canadian Literature," in *Canada and its Provinces*, vol. vi (Toronto, 1914); Casgrain, "Etude critique," in *Transactions of the Royal Society of Canada* (Ottawa, 1884); King, *The Other Side of the Story of the Upper Canadian Rebellion* (Toronto, 1886).

DENTAL FORMULA. A formal statement of the number and arrangement of the teeth. See TEETH.

DENTALS (Neo-Lat. *dentalis*, from Lat. *dens*, tooth). A name given to sounds formed or pronounced against or near the front upper teeth with the tip or front of the tongue, such as *d*, *t*, *th*, *l*, or *n*. This term is very imperfect, as the teeth bear no important part in the production of the sounds in question and sometimes, as in the English pronunciation of *l* and *n*, no part at all. For this reason phoneticians attempt often to avoid the term, substituting lingual, tongue point, lateral (for *l*), or the like.

DENTATUS, MANIUS CURIUS. A Roman eminent for his warlike exploits and the republican simplicity of his life. In his first consulship he triumphed over the Samnites and the Sabines (290 B.C.); by defeating the Samnites he ended a war that had lasted 50 years. During his second consulship (275) he defeated Pyrrhus, near Beneventum, and drove him from Italy. In 272 he became censor. On one occasion a Sabine embassy, sent to his farm with gifts, found him roasting turnips at the hearth. Rejecting the gifts, he declared that he preferred rather to rule those possessing gold than himself to possess it. It was he who, to drain the Valley of Reate, dug the canal from Lake Velinus to the river Nera, where it falls in the well-known cascade of Terni (q.v.). Pliny, *Historia Naturalis*, 7, 68, says his cognomen (q.v.) "Dentatus" was due to the fact that when he was born his teeth were already grown.

DENTICE (Lat. *dentix*, a kind of sea fish; from *dens*, tooth, on account of its voraciousness). A fish of the genus *Dentex*, family Sparidae (sea breams, etc.), having a deep, compressed body and generally perchlike form; a single dorsal fin, the anterior rays of which are spinous; scaly cheeks, and large canine teeth. One species (*Dentex vulgaris*), "dentix" of the ancient Romans, abounds in the Mediterranean and attains 20 to 30 pounds' weight. It is excessively voracious, devouring other fishes, but is itself in much request as an article of human food, and great numbers are taken in southern Italy and in Dalmatia and the Levant, where it is a considerable article of commerce, being cut in pieces and packed in barrels with vinegar and spices as well as served fresh.

DENTIFRICE, *dên'ti-fris* (Lat. *dentifricium*, tooth powder, from *dens*, tooth + *fricare*, to rub). Any substance, generally a powder, which is employed as an aid in cleaning the teeth. Charcoal and cuttlefish-bone powder are useful as detergents; chalk, as a soft powder; and pumice, as a hard, gritty substance for occasional use, when the teeth are more than ordinarily discolored. Catechu, cinchona, and rhatany are employed to give astringency to the tooth powder; myrrh, to impart odor; and

bole armeniac, to communicate a red color. Common salt, cream of tartar, phosphate of soda, and sulphate of potash are occasionally used; and where the breath has an unpleasant odor, the addition of four parts of bleaching powder (chloride of lime) to 100 of the tooth powder removes the fetid character of the breath and also tends to whiten the teeth. An excellent mouth wash may be prepared by adding to a tumblerful of water 10 or 15 drops of a mixture containing equal parts of carbolic acid and essence of peppermint.

DENTILS (Lat. *denticulus*, dim. of *dens*, tooth). A series of small blocks, arranged in a row closely serrated, especially under the corona in a classical cornice. They are used in the Greek Ionic and Corinthian orders and by the Romans also in the Denticulated Doric, Corinthian, and Composite orders. See ENTABLATURE.

DENTINE, dên'tin (Fr., from Lat. *dens*, Eng. tooth). The tissue forming the principal mass of the teeth. It is a modification of osseous tissue, but differs from this in its structure and chemical composition. Microscopical examination shows numerous minute branching tubules embedded in a dense intertubular substance and opening into the cavity of the tooth, which contains the pulp. Externally the crown of the tooth is covered by a thin layer of enamel, which is extremely hard and compact.

DENTIROSTRES, dên'ti-rôs'trêz (pl. of Neo-Lat. *dentirostris*, from Lat. *dens*, Eng. tooth + *rostrum*, beak, bill). A term no longer in use, formerly designating an artificial group of birds, mostly insectivorous, having a notch and "tooth" in the margin of the upper mandible.

DENTISTRY. The science of diseases or lesions of the teeth and adjacent organs, and the art of making and inserting appliances for the correction of loss, deformity, injury, or malposition of those organs. The two main branches of dentistry are prosthetic or mechanical dentistry, sometimes called prosthodontia, and operative or surgical dentistry. It is not easy to draw a distinct line of demarcation between these two branches, for much of the work considered to be in the province of the operative department is really prosthetic or mechanical and vice versa. Prosthesis in its surgical sense has been defined to be "the addition of an artificial part to supply a defect of the body." Many of the conditions about the mouth which call for treatment require on the part of the dentist an intimate knowledge of both branches, and the treatment is both prosthetic and operative. The operation of filling teeth, and also the insertion of inlays, although generally considered as belonging to the department of operative dentistry, are to a certain extent prosthetic, since they supply artificial substitutes for lost natural parts. Under the head of operative dentistry come also the operations of extracting teeth, implantation, replantation, transplantation (see below), removal of deposits from about the teeth, and the treatment of the various diseases or injuries of the dental organs or their surroundings. The making of artificial dentures, crowns, bridgework, obturators, and artificial vela is prosthetic; but the adjustment of such appliances, or perhaps the preliminary treatment, may require no small amount of surgical

knowledge and skill. The operative dentist must also to a certain extent be qualified as an oral surgeon, in order that he may treat some of the ordinary diseases or injuries which may affect the mouth or maxillary bones. The correction of irregularities of teeth and the making of appliances for the purpose are largely mechanical, and for that reason usually classed under the head of prosthetic dentistry. Strictly speaking, however, the operation is not a prosthetic one, and many prefer to class this as a third branch or subdivision of dentistry, calling it orthodontia, and the operator an orthodontist.

As a distinct profession, dentistry has only developed during the past century. Prior to that period, so far as we can determine, it existed only as a somewhat unimportant branch of the healing art; and some of the operations now considered to belong only to the domain of dentistry were then performed by the medical practitioner, or perhaps by some artisan who made claim to a certain amount of proficiency in the performance of such operations. The time is not so long passed since it was not unusual for the barber or blacksmith to extract teeth and to receive a fee therefor, nor since it was customary for the silversmith or jeweler to make artificial dentures.

Certain branches of dentistry were practiced long before the modern profession came into existence, and dental operations were performed early in the history of civilized nations. The wearing of false teeth must have been common in Rome in the time of Martial, who frequently ridicules them. One couplet runs:

"False teeth and hair flaunts Lælia shamelessly,
But not false eyes, for these she cannot buy."

The Romans probably acquired their dental knowledge from the Etruscans, and the Etruscans and Greeks from the Egyptians. Specimens of dental work in the shape of natural teeth bound together with gold, or artificial teeth of ivory, bone, wood, or stone, attached to the natural ones by means of cord, or gold or silver bands or ligatures, have been found in the jaws of mummies, which were probably buried 500 or 600 years before the Christian era; but, so far as we know at present, there are no authentic examples of tooth filling of equal antiquity. In writings upon the subject of dentistry the statement is not infrequently made that teeth of mummies have been found filled with gold. But, according to the researches of Van Mater and others, the truth of such statements is certainly to be questioned. Van Mater, who had unusually good opportunities for archaeological investigation, asserts that in his careful study of the teeth of many of the remains taken directly from excavations of ancient tombs in Italy, and also of the teeth of mummies in various museums and private collections, he was unable to find a single example of a gold filling in such teeth. The results of his investigations seem to show that cases hitherto supposed to be examples of gold filling were nothing more or less than specimens of bridgework, or perhaps the banding of teeth with gold for the support of loose ones or to hold artificial teeth in place. Many of the specimens found were so covered with the accumulated dust of centuries that it was impossible, before removing some of that accumulation, to tell whether they were examples of gold fillings in the teeth or gold bands about

the teeth. It is well known that the higher orders of Egyptians often caused the mummies of their deceased friends and relatives to be lavishly decorated with paint and gilding, and in several instances the supposed gold fillings in the mouths of Egyptian mummies have, on mere scratching with a knife, proved to be nothing but superficial gilding on the natural teeth.

References to dental operations are found in the writings of Herodotus and Hippocrates in the fifth century B.C. Aristotle wrote on this subject about 350 B.C., and Heraclides of Tarentum, Herophilus, and Erasistratus are recorded as dental operators three centuries before our era. According to the writings of C. Aurelinus, Erasistratus deposited in the temple of the Delphian Apollo a leaden "odontogogue" (forceps), "to prove that [only] those teeth ought to be removed which are loose or relaxed, and for which a leaden instrument will suffice." Celsus, who lived about 100 B.C., was the first to recommend the use of the file in the mouth, saying that the points of a decayed tooth, which hurt the tongue, should be removed with an iron file. Horace (65 to 8 B.C.), Ovid (43 B.C. to 17 or 18 A.D.), Martial (c.43-104 A.D.), already quoted, and other of the ancient Greek and Latin poets, allude in their writings to artificial teeth, as does Cicero. The further history of dentistry is meagre and uncertain. Before the invention of printing the methods of recording and transmitting knowledge were so laborious and expensive that only matters of great importance were transcribed, while other matters, of lesser importance, were transmitted and preserved only by word of mouth. Thus, the early history of the profession is imperfect and uncertain. The oldest printed book known to dental bibliography is one dated 1532, printed in German by Peter Jordan and containing extracts or quotations from the works of Galen, Avicenna, Mesua, Cornelius, Pliny, and others. This book was written for lay readers by an anonymous writer, and in the chapter treating of decay of the teeth the author, quoting from Mesua, advises, as one method of treatment, first to scratch and clean with a fine chisel, knife, file, or any other suitable instrument, the parts attacked, and then to fill the cavity with gold leaves for the preservation of the remaining parts of the tooth. If this quotation is reliable, the operation of filling teeth with gold must have been known more than 1000 years ago. Galen (150 A.D.) treated the subject of the teeth more extensively than any other of the ancient authors, and his writings on that topic were the best up to the time of Fallopius, Eustachius, and Ambroise Paré in the sixteenth century. Fauchard wrote on dentistry in 1728, and Bourdet in 1757. John Hunter in 1771 published his *Treatise on the Natural History of the Human Teeth*, and in 1778 A *Practical Treatise on Diseases of the Teeth*, as a supplement to his former work. Not being a dental specialist, however, he wrote anatomically and philosophically rather than practically. Woodfendale's *Practical Observations on the Human Teeth* was published in London in 1783. Blake wrote on dentistry in 1798 or 1801. Since the beginning of the nineteenth century a considerable amount of original research has been carried on in all branches of dental science, and a large and increasing number of treatises have been devoted to dentistry exclusively.

Histology and Development. The microscope has done much to improve the practice of modern dentistry. Leeuwenhoek was the first to give an intelligent idea of the histological structure of the teeth (c.1682). The main work, however, on the embryology, histology, and pathology of the teeth was done during the nineteenth century. The first rational theory of the evolution of the teeth was advanced by Goodsir in 1837. In 1860 Robin and Magitot brought forth a better theory in regard to the mode of development of the teeth, and their theory, with very little modification, is accepted at the present time. See **TEETH**.

Artificial Dentures. Prior to the discovery of the method of making porcelain teeth the dentist made use of human teeth, animal teeth (those of cattle and sheep), hippopotamus tusks, elephant and other ivories, and bone. The human and animal teeth were fastened in the mouth by ligatures of gold or silver wire, unbleached thread, sea grass, or silkworm gut. The hippopotamus or elephant ivory, or the common bone, was carved in single teeth or blocks, and perhaps in the shape of full or partial dentures, to replace the lost natural teeth. The objections to this method of restoration were the difficulty of getting accurate adaptation in the mouth and the tendency, because of the porosity of the material, to absorb moisture, to become offensive, and ultimately to decay. The use of porcelain as a material for artificial teeth was first proposed by Fauchard in 1728; but the manufacture of porcelain teeth was first actually begun by Duchateau, a French chemist, assisted by Dubois, a dentist of Paris, somewhere between 1774 and 1776. The date of the introduction of metal bases in prosthetic dentistry is not definitely known. It is believed, however, that gold was the first metal used as a base for artificial teeth, and that Dr. Gardette, of Philadelphia, was the first to use the gold base in this country, in or before 1787. Among the other metals which have been used as bases for artificial dentures are silver, platinum, aluminum, tin, and various metallic alloys; but at the present time gold and platinum are the only metals in general use for that purpose. *Gutta-percha* as a base was introduced in England by Edwin Trueman about 1851. In 1851, also, Nelson Goodyear discovered a method of making a hard rubber compound, since named *vulcanite*, and in 1855 Charles Goodyear, Jr., obtained a patent in England for making a dental plate of hard rubber, in which the teeth were secured before the compound was vulcanized. *Rose pearl*, a preparation of collodion, was next experimented with as a base, but, owing to the difficulty of manipulating it and to its lack of durability, it fell into disuse. *Celluloid* was the next material tried, but, being more porous and less durable than vulcanite, it is seldom used at present. *Porcelain* and a combination of platinum and porcelain have been used as bases for artificial dentures. Porcelain alone did not come into general use because of the difficulty of manufacture, brittleness, and danger of shrinkage or warping during the process of firing. The combination of *porcelain and platinum* (continuous gum) is made as follows: A base of platinum is swaged to fit the mouth, the artificial teeth are lined with metal and soldered to the platinum base; a porcelain body of the proper shade is next molded about

the necks and root portion of the artificial teeth, as well as upon the exposed surfaces of the platinum, and carved and colored to imitate the natural mucous membrane of the mouth; the entire piece is then put in an oven and baked long enough and often enough to fuse the porcelain properly. This method of inserting artificial teeth is one of the best at our command, so far as beauty, cleanliness, durability, and correct imitation of nature are concerned.

Crown and Bridge Work. Modern bridge work (or the insertion of artificial teeth by means of bands, springs, or artificial crowns attached to the crowns or roots of natural teeth) is but a modification of methods pursued by the ancients many centuries before the Christian era. The use of bridges is not infrequently carried to extremes, and bulky bridges are sometimes attached to teeth which are incapable of bearing the strain for any length of time. Poorly made or improperly adapted bridges are frequently inserted and are prolific sources of pollution of the secretions of the mouth; and some cases of movable or immovable bridges require considerable sacrifice of natural tooth structure, or perhaps devitalization of the pulp, in order that the bridge may be properly adjusted. It is sometimes a difficult matter to determine the best means of restoration or prosthesis in these cases, but the conservative dentist will hesitate, and perhaps prefer a partial denture, rather than resort to the sacrifice of those tissues for the sake of introducing a bridge.

Gold shell crowns, for the purpose of covering teeth too badly broken down to be amenable to the operation of filling, are supposed to be of quite recent invention, but it is claimed that their use was suggested by M. Mouton, of Paris, as far back as 1746. It is said also that Mouton advised enameling the exposed surfaces of such crowns. Gold crown work has been abused even more than bridge work, and we frequently find gold crowns placed on the anterior teeth to protect them when injured or diseased, or to serve as abutments for bridges when crowns of porcelain or porcelain-faced crowns would answer the purpose as well and be much more sightly. Many patients will insist on a dentist placing a gold cap or shell crown on a tooth, when a filling of some sort would be very much better and much more artistic. Fortunately the laity, as well as the dentist, are beginning to appreciate the enormity of this offense against good taste.

Fillings, etc. The filling of teeth is now sometimes called *obturation*. Before the introduction of gold leaf foil was used as the material for filling teeth. Celsus (100 B.C.) is sometimes referred to as the first to have advised filling cavities in teeth; but the only reference to the subject in his works is his recommendation to stuff with lead decayed and frail teeth that are to be extracted, in order that they may not break under the forceps. Tooth filling proper was, up to the beginning of the nineteenth century, practiced very seldom. The operation of filling teeth with gold was mentioned by Fauchard (died 1781). For years gold was used in the form of thin foil or rolled gold of the noncohesive variety. Sponge or crystal gold was introduced in 1846, but was little used until its application to dental purposes was patented, and its working quality

improved by A. J. Watt, of Utica, N. Y., in 1853. In 1855 Dr. Arthur, of Baltimore, recommended the use of cohesive gold for filling teeth, and this variety is more used at present than any other. The use of mallet force in filling teeth with gold was first recommended by Dr. William H. Atkinson, of New York. *Platinum* has been tried as a filling material, but was found to be too harsh and to have too little ductility and plasticity to make it valuable for that purpose. It is sometimes used in combination with gold foil or rolled gold for a filling exposed to severe stress. *Silver* is not used alone for fillings because of its tendency to oxidize and because of its stiffness and want of ductility. *Tin*, in the form of foil, has been used for filling teeth since 1783 and is still used for certain kinds of cavities. The advantages of tin are that it is soft, pliable, easily condensed and adapted to cavity walls, a poor conductor of heat, and, in cases of disintegration, yields salts that seem to possess antiseptic properties. Yet its softness, its almost complete lack of cohesiveness, its property of becoming discolored in the mouth, and its disintegration under chemical and mechanical influences, also constitute serious disadvantages.

Owing to the difficulties in properly manipulating the simple metals in filling teeth, efforts were early made towards discovering some material of greater adaptability, and, as a result, we have the plastics so extensively used at the present day. The earliest of these materials were preparations of the gum resins, such as ethereal or alcoholic solutions of mastic, sandarac, damar, or copal. Then fusible metals were employed, until, in 1826 or thereabouts, Taveau, of Paris, introduced the use of *amalgams*. An amalgam is a combination of one or more metals with mercury, and that first tried was an amalgam of pure silver. The next amalgam to be used was one of coin silver. The amalgams as made at present usually consist of a combination of three or more metals with mercury. Such amalgams, manipulated by improved modern methods, constitute the only plastics that can be considered as permanent filling materials. The other plastics used at present include: *gutta-percha* (introduced in 1847-48); "Hill's stopping" (a mixture of gutta-percha with harder materials); *oxychloride of zinc* (oxide of zinc, with a solution of zinc chloride); *zinc phosphate* (oxide of zinc, with a solution of phosphoric acid); *oxyphosphate of copper*; *aluminum phosphate*; *oxysulphate of zinc*; and other varieties of the cements. Each of these cements has its definite uses and advantages, but all have the disadvantage of serving only as temporary fillings.

The *filling of pulp canals* in devitalized teeth was believed to have been introduced by Maynard and Baker, of Washington, D. C. It has been shown, however, that this operation was practiced by Bourdet and Fauchard, in Paris, as far back as the middle of the eighteenth century and, according to Bourdet, had been practiced by others many years before. The *capping* (covering over) of *exposed pulps* is said to have been first recommended by Koecker. The *dental engine*, in its original form, was introduced by Dr. Morrison, of St. Louis, Mo., in 1846; in its various improved forms it has become one of the most useful of dental appliances. The use of the *rubber dam* for the

purpose of excluding moisture from cavities during the operation of filling teeth was first suggested by Dr. S. C. Barnum, of New York, and this innovation has been as great a boon to dentistry as the introduction of the Esmarch bandage has been to general surgery.

Inlay Work. One of the latest innovations in the art of dentistry is inlay work, i.e., the use of plugs of porcelain, glass, gold, vulcanized rubber, and similar materials, which are cemented into a tooth cavity in such form and shape as to fit it exactly. With the improved methods and materials for making porcelain inlays this mode of filling carious cavities is becoming more and more popular, and when perfected will undoubtedly cause the abolition of gold fillings in the anterior teeth. It may be interesting to observe that inlays of green jade, placed in the teeth probably for ornamentation, have been found in the ruins of Copan, Honduras, and of Yucatan.

Uses of Electricity. Electricity has its practical applications in dentistry as well as in the arts and is utilized not only for the control of various mechanical appliances employed by the operative and prosthetic dentist, but in the form of the electric mouth lamp; the cathaphoric current, etc., is used for diagnostic and therapeutic purposes as well. *Cataphoresis*, or the method of forcing drugs into the tissues by means of the galvanic current, was first proposed by Dr. B. W. Richardson as far back as 1857, but has come into general use only within recent years. The X-rays, or Roentgen rays, are now put to practical use in dental as well as in general surgery and as a means of diagnosis are sometimes of very great assistance. For the purpose of detecting unerupted or impacted teeth, abnormal growths on or about the teeth, imperfect root-canal fillings, resorption of roots, fractures of the jaw, or the presence of foreign bodies in the alveoli of the teeth, the X-rays are of great value and frequently utilized.

Treatment of Loose Teeth. The teeth frequently become loosened from their attachments in consequence of local or constitutional disturbances, and the treatment of this condition is still a somewhat knotty problem. When due to local causes, such as deposits of salivary calculus, or ordinary tartar, the treatment is principally local, and consists in first removing the deposits, getting the teeth as smooth as possible, and then adopting proper therapeutic and prophylactic measures, with a view to inducing a healthy condition of the soft tissues and preventing a return of the deposit. The constitutional cause, which is more often concerned than any other in bringing about the loosening of teeth, is the so-called "gouty" or "rheumatic" condition. In cases of this nature the treatment should be both local and constitutional or general.

Replantation; Transplantation; Implantation. *Replantation*, or the replacing of a natural tooth in the socket from which it has been extracted or forced out, is a very old operation, and its definite history is unknown. *Transplantation*, or the placing of a natural tooth in a natural socket other than the one it originally occupied, is also an old operation and was spoken of by Ambroise Paré in the sixteenth century. In this operation it was customary to use a freshly extracted tooth from the mouth of one person and place it in the socket of a

newly extracted tooth in the mouth of another. In an advertisement inserted in a Philadelphia paper in 1784 Le Mayeur, a dentist, offers two guineas each for sound teeth to be obtained from "persons disposed to sell their front teeth, or any of them." *Implantation*, which may be defined to be the placing of a natural or artificial tooth in an artificially prepared socket, or the insertion of an artificial tooth in a natural socket, was suggested by Dr. William Younger, of San Francisco, Cal., in 1885; but it is asserted that Bourdet, in 1780, advised a similar operation. In the Peabody Museum, at Cambridge, Mass., there is a jaw, discovered in the ruins of Copan, Honduras, wherein is implanted (in the socket of a left lower lateral incisor) an artificial tooth of carved stone, which from the amount of tartar on it would indicate a considerable amount of use in the mouth of the individual. The exact age of those ruins is unknown, but this specimen of implantation probably antedates Dr. Younger's operation by about 1500 years. Experience has shown that implanted teeth are short-lived, so far as their usefulness goes. After a period varying from 2 to 10 or 12 years the implanted teeth almost invariably loosen and fall out, because of absorption of the roots when natural teeth are used, and incompatibility when artificial roots are inserted. In many cases of implantation the operation is unsuccessful from the start, and no union is obtained; in others a slight attachment seems to occur between the tooth and alveolus, which gives out after a few weeks or months; while in a fair percentage of cases the teeth may become firmly attached and remain for several years. As a rule, they seldom remain longer than three or four years and are much shorter-lived than replanted or transplanted teeth.

Anæsthetics. The action and history of the use of anæsthetics may be found described in the general article ANÆSTHETIC, and in a number of special articles on the more important anæsthetic substances in use at present. Here it may be stated that, while chloroform and ether were much used in dentistry formerly, practically the only general anæsthetic employed by dentists at present is nitrous oxide, or "laughing gas." The only local anæsthetic now used in dentistry to any extent is cocaine, which has almost entirely superseded the use of cold-producing volatile substances, like ordinary ether, ethyl chloride, or rhigolene.

Orthodontia. Orthodontia, or the art of regulating or correcting malpositions of teeth, has recently developed into a distinct specialty, although some attention has been given to it by dentists ever since the latter part of the eighteenth century. At the present time some operators devote their whole attention to this branch of practice, and the results obtained by those who have the necessary mechanical ingenuity and diagnostic ability are extremely gratifying.

Dentists. Woolfendale, who came to America in 1766, seems to have been the first regular dental practitioner in the United States. Le-maire came to America probably in 1784. James Gardette, a native of France, began practice in the United States in 1781. He went to Philadelphia in 1784 and continued in successful practice there for 45 years. Josiah Flagg, who, as far as can now be accurately determined, was the first dentist native to the United States, began practice in 1782. He obtained his knowledge of

dentistry from Lemaire. Isaac Greenwood, the father of the John Greenwood who made sets of artificial teeth for George Washington, was probably the first dentist in Boston. John Greenwood and his younger brother, Clark, were in practice in New York about 1784. The increasing growth of the profession since 1820 is shown by the following figures: in 1820 there were about 100 dentists in the United States; in 1872 the number had increased to 5000; in 1893 the number was 13,500; in 1898, 18,000; in 1900 the number in the United States and Canada was 26,500; in 1902 the United States and Canada had over 27,600 dentists, of which number 16,390 were graduates of regular dental colleges.

Literature. L. and M. Greenbaum, *A Practical Treatise upon the General Practice of Dentistry* (New York and London, 1912); Richardson, *A Practical Treatise on Mechanical Dentistry*, ed. by Warren (Philadelphia, 1900); Kirk, *American Text-Book of Operative Dentistry* (ib., 1911); Dexter, *History of Dental and Oral Science in America* (ib., 1876); Brownell, *Anatomy and Histology of the Mouth and Teeth* (2d ed., ib., 1902); Burchard, *Text-Book of Dental Pathology* (2d ed., ib., 1914); Jackson, "Orthodontia and Orthopædics of the Face" (ib., 1904); Lischer, *Principles and Methods of Orthodontics* (ib., 1912); Guerini, *A History of Dentistry* (ib., 1909). See **TEETH**.

DENTITION. See **TEETH**.

DENTON. A city and the county seat of Denton Co., Tex., 35 miles north by east of Fort Worth, on the Missouri, Kansas, and Texas and the Texas and Pacific railroads (Map: Texas, D 3). It is the seat of the North Texas State Normal College and the College of Industrial Arts, and it contains a sanitarium. Denton trades extensively in cotton, wheat, corn, and cattle. The water works, electric-light plant, and sewage system are owned by the municipality. Denton was first settled in 1857 and incorporated in 1868. Pop., 1900, 4187; 1910, 4732.

DENTON (Danetown). A manufacturing and coal-mining town in Lancashire, England, 2½ miles southwest of Ashton. It owns remunerative municipal gas works. Reservoirs of 1,860,000,000 gallons' capacity, which supply water for Manchester, are within the township. Pop., 1901, 14,934; 1911, 16,880.

D'ENTRECASTEAUX ISLANDS, dān'tr'-kās'tō' (named in honor of their discoverer, Joseph Antoine d'Entrecasteaux). A group of islands, about 10 miles off the east coast of New Guinea, lying in lat. 10° S. (Map: East India Islands, J 2). They consist of three large islands, viz., Ferguson, Normanby, and Good-enough, and a number of islets, with a total area of about 1200 square miles. They are very mountainous, some peaks attaining the height of 7000 feet. Extinct volcanoes and hot springs are found on Ferguson Island. Tin and traces of gold have been discovered. In 1885 the group became a part of the administrative dependency of British New Guinea, which, by proclamation in 1906, was renamed the Territory of Papua. The inhabitants are Papuans.

DENUDATION. See **EROSION**.

DENVER. The capital of Colorado, the county seat of Denver County, and the largest city between the Missouri River and the Pacific Ocean. It is situated at the junction of the South Platte River and Cherry Creek, 2025 miles

from New York City and 1457 miles from San Francisco, in lat. 39° 47' N., long. 105° W. (Map: Colorado, E 2). It is one of the most important railroad centres in the West. Among the numerous lines entering the city are the Atchison, Topeka, and Santa Fe, the Chicago, Burlington, and Quincy, the Chicago, Rock Island, and Pacific, the Colorado Midland, the Denver and Rio Grande, the Missouri Pacific, the Union Pacific, the Colorado and Southern, and the Denver, Northwestern, and Pacific. The city is magnificently situated at an altitude exactly 1 mile above sea level and within 15 miles of the eastern base of the Rocky Mountains. Owing to the remarkable clearness of the atmosphere, a stretch of 200 miles of the mountains is discernible from north to south almost every day of the year. Denver has a climate peculiarly mild and adapted to people suffering with pulmonary complaints; the mean annual temperature is 48° F.; the average annual rainfall is about 14 inches, and the sun shines 275 days in the year.

The city occupies an area of 60 square miles. It is distinctively residential, with broad and shaded streets, and is substantially built of brick and stone. It has over 40 miles of thoroughfares paved with asphalt, while 140 miles are surfaced with disintegrated granite. Of the 30 public parks and 10 children's playgrounds within the city, with a total area of 1239 acres, the largest is City Park, a preserve of 390 acres, adorned with flowers, shrubbery, statuary, etc., and including a zoölogical garden, an aviary, a natural-history museum, lakes, race track, and driveways. In addition the city has a chain of five mountain parks and a beautiful drive connecting them. Among noteworthy buildings are the capitol on Capitol Hill, erected at a cost of \$2,700,000; the new Federal building, costing \$2,500,000. St. John's Cathedral (Episcopal); the cathedral of the Immaculate Conception (Roman Catholic); Trinity Methodist Episcopal Church; the Auditorium, seating 12,000 persons; the public library, the United States mint, the county courthouse, the First National Bank building, the Denver Gas and Electric building, and the Chamber of Commerce. Every educational advantage possible is available for the children and youth of Denver. There are 64 grade schools, 4 high schools, 1 trade school, 1 manual-training high school, and 1 technical high school. In addition kindergartens, special schools for retarded pupils, open-air schools, and night schools are maintained. The total school census in 1913 was 51,981. Denver is the seat of the University of Denver (Methodist; see **DENVER, UNIVERSITY OF**); the Jesuit College of the Sacred Heart, founded in 1888; Westminster College (Presbyterian); the Kliff School of Theology; Colorado Woman's College; Loretto Heights Academy, and various schools of music and dramatic art. The city has a magnificent public library, with five branch libraries and eight depositories, containing 165,000 volumes, besides the State library of 41,000 volumes, the Supreme Court library with 31,000 volumes, and numerous others.

A combination of favorable natural conditions has resulted in making Denver the leading industrial city of the western mountain region of the United States. Chief of these is its proximity to the great mining region of Colorado, which produces not only metals—lead, copper, iron, gold, silver, tungsten, vanadium, radium, and uranium—but also coal, the latter making

it possible to smelt the ores and thus avoid shipment to other parts for that purpose. The many railroads entering the city make it the best collecting and distributing centre in the Rocky Mountain States, and the great distance from the eastern manufacturing centres exempts it largely from trade competition. The value of the manufactured products of the 738 industrial establishments in 1913 was \$62,950,381, exclusive of the smelting industry, whose products in 1913 amounted to \$7,500,000. Much mining machinery is produced, and the output of the flouring and grist mills is large. The manufacture of malt liquors and railroad-car construction and repairs are considerable industries. Denver is becoming important as a live-stock market. In 1913 the Union Stock Yards handled about 1,385,000 head of stock, valued at \$48,000,000, and the output of the packing plants was estimated at \$12,775,000. The annual Live Stock Show is second only to the one held in Chicago. In addition the city has a large wholesale jobbing trade which is estimated at \$45,000,000 annually. The Denver City Tramway Company operates 235 miles of electric railways, 203 miles of which are within the city limits. The water supply of the city is brought from the mountains. There are 11 reservoirs, of which the Cheesman Dam, located in the mountains 50 miles from Denver, has a capacity of 26,000,000,000 gallons. The commission form of government was adopted by Denver in 1913. All legislative, executive, and administrative powers and duties are vested in a council of five commissioners, who have charge of the departments of property, finance, safety, improvements, and social welfare. They are elected for four years and receive a salary of \$5000 per year. The commissioners elect one of their number as mayor, who presides at the meetings of the council, but has no power of veto. With the exception of the auditor and the election commission, who are elected, the commissioner of each department appoints all officers, commissions, or boards under his control, subject to civil-service regulations. The total annual income of the city is about \$3,800,000. The larger annual appropriations approximate \$1,300,000 for schools, \$300,000 for the fire department, \$300,000 for the police department, \$200,000 for municipal lighting, and \$275,000 for parks.

Denver was first settled by miners in 1858, and in the following year was incorporated as a city by the provisional Legislature and named in honor of Gen. J. W. Denver, then Governor of Kansas. In 1861 it was reincorporated by the first Territorial Legislature. It became the capital of the Territory in 1867 and in 1870, on the completion of the Denver Pacific and Kansas Pacific railroads, was first connected by rail with the East and South. Destructive floods occurred in 1864, in 1876, and in 1912. In 1894 the town of South Denver was annexed. Since 1870 its growth has been exceedingly rapid; a population of 4759 in that year having increased to 35,629 in 1880, 106,713 in 1890, 133,859 in 1900, including 25,300 persons of foreign birth and 3900 of negro descent, and 213,381 in 1910. The population in 1914 was approximately 240,000.

DENVER, UNIVERSITY OF. The earliest institution for higher learning in the Rocky Mountain States, founded in 1864 at Denver by Gov. John Evans. It was known as the Colorado

Seminary until 1880, when the school was re-organized and the present name adopted in evidence of its increased educational scope. The departments at University Park are the College of Liberal Arts, the Graduate School, the Summer School, and the Warren Academy. The professional departments, in the heart of Denver, are the Law School, the Dental School, the School of Commerce, and the Teachers' College. The University buildings at University Park are University Hall, the Carnegie Library, the Carnegie Science Hall, the Alumni Gymnasium, the Chapel, the Chamberlain Observatory, one of the most important astronomical stations of the world, and the two dormitories, known as Templin Hall and Wycliffe Hall. In Denver the buildings used for school purposes are the Law and Commerce Building and the Dental Building. Five other buildings in Denver and four others at University Park are now producing income. The enrollment for 1913-14 was 1159, of whom 816 (or 70 per cent of the total) reside in Denver. There were, in 1914, 2650 graduates in the regular courses in all departments. All properties and endowments aggregate \$1,200,000 in value. The General Education Board has recognized the University of Denver by a conditional gift of \$100,000. An addition of \$400,000 was made to the productive endowment in 1914. The president in 1914 was Henry A. Buchtel, D.D., LL.D.

DENZINGER, dën'tsing-ër, FRANZ JOSEPH (1821-94). A German architect. He was born at Liège, Belgium, where his father was professor at the University. He studied at Würzburg, then in Munich at the Polytechnic Institute and under Gärtner at the Academy of Arts. In 1854 he entered the government service at Regensburg and in 1859 was appointed architect of the cathedral, the restoration and completion of which he carried out in the most successful manner. His next important work was the reconstruction of the cathedral at Frankfort-on-the-Main, which had been destroyed by fire in 1867. Here he also erected the building of the municipal archives and the Dreikönigskirche. Among his other structures may be mentioned the chemical laboratory of the University at Erlangen and the saline bathing establishment at Kissingen. He died in Nuremberg.

DE'ODAND (ML. *deodandum*, to be given to God, from *Deo*, to God + *dandum*, to be given). In English law, a term applied to any chattel which was directly instrumental in causing the death of a human being, either by accident or by homicide. Where a person was thus killed a jury was summoned, and, if any domestic animal or inanimate thing was found to be the immediate cause of his death, it was forfeited to the crown, usually for pious or charitable uses—"to appease God's wrath," as some of the early writers put it. Thus, if a horse and cart ran over a person and killed him, they were forfeited as accursed things, irrespective of whether they belonged to the deceased, the person having them in charge, or to some other person who was not otherwise connected with the accident. The right or franchise to have all deodands in a certain district was sometimes granted to individuals by the crown. This curious law, which has its analogies in many primitive legal systems, was not finally abolished in Great Britain until the year 1846 by statute (9 and 10 Vict., c. 62). It was never recognized in the United States. Consult Blackstone, *Commentaries on the Laws of*

England, and Stephen, *History of the Criminal Law of England* (London, 1883).

DE'ODAR'. See CEDAR.

DEODORIZER (from Lat. *de*, from, away + *odor*, smell, scent). Any chemical substance employed for the purpose of absorbing or destroying the odoriferous principles evolved especially from decomposing animal and vegetable matter. They strictly belong to the classes of substances known as antiseptics (q.v.) and disinfectants (q.v.).

DE OFFICIIS, *dě* ôf-fish'f-is (Lat., On Duties). A treatise on morals by Cicero, addressed directly to his son Marcus. The work is in three books, but is doubtless incomplete.

D'EON DE BEAUMONT, *dă'ôn'* de bô'môn'. See EON DE BEAUMONT.

DEOPRAYAG, *dă'ô-pră-yăg'*, or **DEVAPRAYAGA**, *dă'vâ-pră-yă'gă* (Skt., altar of the gods). A village of the State of Tehri, United Provinces, India, 2265 feet above sea level, remarkable chiefly for its situation at the fork of the Alaknanda and the Bhagirathi, which form the Ganges (Map: India, C 2). As the source of the sacred river, Deoprayag is a favorite place of pilgrimage for the Hindus. The temple of Raghunath, built on a high terrace, is capped by a white cupola, golden ball, and spire. A flight of steps in the rock leads down to the brink of the mingled streams, and there three basins have been excavated in the solid stone a little below the level of the surface of the current for ablutions. The permanent population, about 1000, consists chiefly of Brahmins.

DE O'RATOR'E (Lat., On the Orator). A dialogue in three books by Cicero (55 a.c.), treating of the studies necessary for an orator, the matter, and the form and delivery of a speech. The principal speakers are the great orators Lucius Crassus and Marcus Antonius.

DEPARTMENT (Fr. *département*, from Lat. *dispartire*, to divide). An administrative division in France. The old provincial divisions were abolished by the Constituent Assembly in 1790, and the country was divided into 83 departments. This was done at the instance of Mirabeau, who pointed out the necessity of wiping out the ancient territorial boundaries in order to concentrate power in the hands of the central government, and to destroy the influence of the aristocracy, which, based upon ancient custom, was still strong in the provinces. In the redistribution, care was taken to efface as far as possible ancient political divisions, and in a large number of instances a department was constituted out of territory taken from two or more provinces. Most of the departments were named after rivers or mountains. At the head of each is a prefect, appointed by the President of the Republic, and assisted by a *conseil de préfecture*. The departments are subdivided into *arrondissements*.

DEPARTURE. In nautical language, a distance along a parallel of latitude measured in nautical miles, especially the distance east or west made by a ship. When the course is neither east nor west, the *departure* = *distance sailed* \times *sine of course*. Since minutes of longitude are in length proportional to the cosine of the latitude in which they are measured, we have *departure* (in nautical miles) = *minutes of longitude* \times *cosine of the latitude* in which the departure is measured. To determine the exact position of a ship when starting upon a voyage and after leaving port is termed *taking a departure*. It is

usually done by observing the bearings of two or more objects and transferring those bearings to a chart whence the exact point is determined. For use of this term in surveying, see SURVEYING.

DE PAUW (*dě-pă'*) **UNIVERSITY**. An institution of higher learning situated at Greencastle, Ind. It was founded by the Indiana Conference of the Methodist Episcopal Church in 1837 and was known until 1884 as the Indiana Asbury University. In recognition of large gifts by the Hon. Washington C. De Pauw during his life and the bequest of a share in his estate which has added more than a half-million dollars to the endowment of the university since his death, the name of the institution was changed to De Pauw University. Schools of Medicine, Law, Theology, Pedagogy, Music, and Art, as well as the College of Liberal Arts, were provided in the charter, and at some time every one of them has been instituted and conducted for a period of years. But for lack of sufficient income to support them on a high educational plane all of the professional schools have been suspended except the School of Music. At the present time the institution includes only the College of Liberal Arts and the School of Music. The plant includes 12 buildings and 50 acres of campus, valued at \$528,000. Recent benefactions and bequests have raised the productive endowment to \$1,200,000. There are 60 instructors in the faculty, and the student enrollment is slightly above 1000. Graduates to the number of 3157 (including all schools) are scattered throughout the world. The president in 1914 was Rev. George R. Grose, D.D.

DEPENDENT CHILDREN. A term applied to normal children who must be supported by other than their natural guardians. It does not include the deaf and dumb, blind, insane, epileptic, and feeble-minded, who are classified as *defectives*, nor those of perverse habits, known as *juvenile delinquents*.

In ancient times the Semites placed a higher value on children than did the Aryans. Among the Aryans, however, childless families sometimes adopted children. The father in Greece and Rome had practically power of life and death over his children and could sell them into slavery. Infanticide was common. Yet the children left alone were not entirely neglected, and their adoption was encouraged by decrees making them the slaves of those caring for them. Not until after the introduction of Christianity do we find any special attention paid to child saving. From that time to the present among Europeans and their descendants, and wherever Christian missionaries have gone, we find increasing attention paid to dependent children.

In the sixth century came the beginnings of special institutions for such children in France and a little later in Italy. (See **FOUNDLING HOSPITAL**.) From these humble beginnings the great institutions now found in all civilized lands have grown. The state has come to recognize that it is responsible for the proper care of the children and is gradually extending its efforts for the sake of its own future welfare as well as for that of the children.

From the practice of receiving young children into institutions to save their lives there naturally developed the belief that such institutions were even better places for the children than any family home. Here children would be kept from

the temptations of the world; here they would be cared for by skilled matrons and taught by chosen teachers; here, too, religious instruction would be planted in fruitful soil. The Church, under whose influence these institutions arose, encouraged this belief. This is the principle underlying all institutional care for dependent children. The highest development of this principle is found in the institutions of the Catholic church and of the Hebrews, in which it is possible for a child to pass from infancy to maturity constantly guarded from the world. Europe, except France, has largely followed this method, and it is widespread in America.

The older plan of rearing dependent children in family homes has, however, kept a foothold and is latterly coming rapidly to the front. It exists in two forms. In the first the children are boarded out in families, the board being paid by societies organized for the purpose of caring for children or by the state. This system has been successfully carried on in Scotland and England, but has found its greatest development in Australia and France. In France a special department of the government, with branches in the provinces, boards out the children and supervises them until they are 21 years of age. No board is paid after the twelfth year, the children being then indentured. In the second form the children are placed out for adoption or are indentured to persons willing to receive them and to assume all responsibility for their maintenance and education. After the initial expense of finding and investigating a home, this system costs the public nothing save the expense of supervision to safeguard the interests of the child. This plan has found its chief field in Canada and the United States.

In America during Colonial times children were apprenticed in families or were consigned to the almshouse. It was gradually recognized that the influence of the almshouse was degrading, and the leading States now forbid the practice. It still prevails in the Southern States. Illinois is the only prominent Northern State permitting it. The movement for institutions began about 1800 and rapidly spread in the larger cities. Organized effort for placing children in family homes started with the founding of the New York Children's Aid Society in 1853. Similar societies are now found in most cities. The first of the children's home societies was started in Illinois in 1883. They now exist in 24 States, chiefly in the West. Their work has been largely outside the big cities.

The advocates of the institutional plan and those who favor the placing-out system have long been at swords' points. Each has claimed that the other system did not produce the best results. There is taking place in America, however, a gradual amalgamation of the two systems. It is now admitted that the institution fosters a pride which tends to develop the institution at the expense of the child; that institutional life is artificial and cultivates dependence rather than independence. On the other hand, it is admitted that some children need for a time the training in obedience and in respect for authority which institutional discipline gives; that children in bad physical condition often receive better care in an institution than is possible in the average home; that the work of placing out children must be most carefully done to avoid putting children in bad homes; that it is sometimes hard to find the proper

place for a particular child. To-day institutions are placing out many children, while placing-out agencies are sending children to institutions for temporary care. Both agree that the home is the normal place, and that the place of the institution is to give the necessary training to fit the child for home life. It has so far been possible to find free homes for most of the children placed out, and the boarding-out system has been in use only in the East.

The general interest in the subject has led to the active participation of the State. In New York, California, Pennsylvania, and to a lesser degree in other States, subsidies have been granted from public funds to private societies. The result has not been satisfactory. Large institutions have been built up which tend to receive children not really dependent for the sake of additional revenue. The result is plainly seen by comparing New York with 317.3 dependent children per 100,000 of population; California, 290.8; Pennsylvania, 153.6; Indiana, 110.1; Michigan, 65.6; West Virginia, 18.9; North Dakota, 18; Mississippi, 16.2; Arkansas, 12.7; Oklahoma, 8.8. These differences reflect not merely differences in institutions, but in greater degree differences in economic conditions. Child dependency is largely an urban condition. Michigan in 1874 opened what is known as the State Public School (q.v.). All children becoming public charges are sent to this school and are placed out as soon as seems best. The result has been an actual decrease in the number of dependent children. This system has been adopted in Rhode Island, Wisconsin, Minnesota, and Colorado. In Massachusetts and Pennsylvania the boarding-out system has been largely developed. The State homes for the orphans of soldiers and sailors, started soon after the Civil War, have been generally abandoned or turned into orphan asylums. There is now a strong movement towards State control and supervision of the work for dependent children. New Jersey has organized a State Board of Children's Guardians. Indiana has appointed a State agent. Consult: Wines, *Prisons and Child-Saving Institutions* (Cambridge, Mass., 1880); Hill, *Children of the State* (London, 1889); Folks, *Care of Destitute, Neglected, and Delinquent Children* (Albany, 1900); Henderson, *Introduction to Study of Dependents, Defectives, Delinquents* (Boston, 1893); id., *Modern Methods in Charity* (New York, 1904); *Report of Committee on History of Child-Saving* (Boston, 1893); Bartlett, *Supervision and Education in Charity* (New York, 1903); Devine, *The Principles of Relief* (ib., 1904); *United States Census: Benevolent Institutions* (Washington, 1904); Gray, *Philanthropy and the State* (London, 1908); Conyngton, *How to Help* (New York, 1909); Corrigan, *The Law and the American Child* (Worcester, 1911); Chicago School of Civics and Philanthropy, *The Child in the City* (Chicago, 1911); Engel, *The Elements of Child Protection* (New York, 1912); Webb, *The Prevention of Destitution* (London, 1912).

DEPENDENTS, DEFECTIVES, DELINQUENTS. Dependents are those who must be supported by other than their natural guardians or family. Defectives are those who are not normally developed, the blind, etc. Delinquents are those who commit acts forbidden by law. This classification is not satisfactory, but it is in very general use. See SOCIAL DEBTOR CLASSES.

DE PERE, de per'. A city in Brown Co., Wis., 5 miles southwest of Green Bay, on Fox River, and on the Chicago and Northwestern and the Chicago, Milwaukee, and St. Paul railroads (Map: Wisconsin, F 4). Lake steamers ascend the river as far as De Pere. De Pere is the seat of St. Norbert's College and is the site of the first mission in Wisconsin. The city has good water power and manufactures of bricks, pottery, writing paper, steam boilers, gasoline engines, cigars, sash and doors, skiffs, yachts, launches, flour, woolen goods, foundry products, and dairy products. There are also several limestone quarries. Cattle, grain, and hay are among the exports. A steel bridge over the river 1600 feet long connects the east and west sides of the city. The water works are owned by the municipality. Pop., 1900, 4038; 1910, 4447.

DEPEW. A village in Erie Co., N. Y., 8 miles east of Buffalo, on the New York Central and Hudson River, the International Electric, the Delaware, Lackawanna, and Western, the Erie and the Lehigh Valley railroads (Map: New York, B 5). Depew contains a public library and fine high-school building. Its chief manufacturing establishments are locomotive and coupler works, a large smelting plant, and storage battery, spring, and gear factories. The village was incorporated in 1894 and was named after ex-Senator Chauncey M. Depew. Pop., 1890, 3379; 1910, 3921.

DEPEW, CHAUNCEY MITCHELL (1834-). An American lawyer, railroad president, politician, and orator. He was born in Peekskill, N. Y., graduated at Yale in 1856, was admitted to the bar two years later, and soon took an active part in politics. He was in the State Assembly in 1861 and 1862 and Secretary of State of New York from 1863 to 1865. In 1872 he was candidate for lieutenant governor on the Liberal Republican ticket. In 1866 he became attorney for the New York and Harlem Railroad, and in 1869 for the New York Central. He was elected second vice president of the New York Central in 1882 and was president from 1885 to 1898, when he resigned this position and the presidency of the West Shore Railroad to become chairman of the entire Vanderbilt system. He was delegate at large to the Republican national conventions from 1888 to 1904 and nominated Benjamin Harrison in 1888 and Levi P. Morton in 1896. In 1888 he received 99 votes for the presidential nomination. In 1899-1911 he was United States Senator from New York. He had declined the State portfolio in President Harrison's cabinet in 1892. He delivered addresses at the Washington Centennial in New York in 1889 and the dedication of the World's Columbian Exposition at Chicago in 1893, and orations at the memorial services of President Garfield and General Sherman, and was a famous after-dinner speaker. He was a regent of the University of the State of New York in 1877-1904 and a member of the corporation of Yale University in 1893-1906. Senator Depew became involved in the investigation of certain New York life-insurance companies in 1905, with the result that he repaid to the Equitable Life Assurance Society, of which he was a director, a loan made to a concern in which he was interested; and he resigned from the directorate of the Equitable. In 1911 he was succeeded in the Senate by J. A. O'Gorman (Democrat).

DE PEYSTER, de pis'ter, ABRAHAM (1658-

1728). An American merchant and Colonial official, son of Johannes de Peyster (q.v.), born in New Amsterdam (New York). He was mayor of New York from 1691 to 1695 and afterward Chief Justice of the province and President of the King's Council; and he acted as Governor in 1701. He served as colonel of the militia of the city and county of New York and as treasurer of the provinces of New York and New Jersey. There is a statue of him in Bowling Green, New York City, by G. E. Bissell.

DE PEYSTER, ARENT SCHUYLER (1736-1832). An American soldier, born in New York City, and prominent as a Royalist at the time of the Revolution. From 1775 to 1783 he was in command, at different times, of Detroit, Mackinac, and several posts in Upper Canada, and endeavored to turn the Western Indians against the United States. After the war he removed to Dumfries, Scotland, where he became a friend of Burns.

DE PEYSTER, JOHANNES (1600-85). One of the early settlers of New York and the founder of a noted American family. In the Colony, then New Amsterdam, he held the offices of burgomaster and deputy mayor and resisted the cession of the province to the British in 1664 and 1674.

DE PEYSTER, JOHN WATTS (1821-1907). An American writer on military and historical subjects. He was born in New York City, was educated at Columbia, became colonel in the State militia in 1845, adjutant general in 1855, and brevet major general in 1866. Among his works are: *Life of Field Marshal Torstenson* (1856); *The Dutch at the North Pole, and the Dutch in Maine* (1857); *Personal and Military History of Gen. Philip Kearny* (1869); *Before, at, and after Gettysburg* (1887); *The Real Napoleon Bonaparte* (1897). Consult *Law, Here and There in Two Hemispheres* (Lancaster, Pa., 1903), and F. Allaben, *John Watts de Peyster* (2 vols., New York, 1908).

DEP'HAL. See BREADFRUIT TREE.

DEPILATORIES, or EPILATORIES (Lat. *de-pilare*, to pull out hair, from *de*, off + *pilus*, a hair). Certain agents employed for removing hair from the skin. They were extensively used by the ancients, but are now restricted in their employment to the face and to the removal of the hair from the scalp in the treatment of certain diseases. The agents most commonly used are the caustic alkalis, arsenic, barium sulphide, calcium sulphide, and quicklime. One recipe consists of 5 parts of caustic or slaked lime, 10 parts of carbonate of soda, and 40 parts of lard. The trisulphide of arsenic (commonly known as orpiment) is occasionally used, but its employment is dangerous. A mixture of caustic lime and orpiment constitutes some of the depilatories to be purchased; and it is believed that the Turkish *rusma* is composed of these ingredients. Electrolysis, by means of a strong galvanic current, is used by physicians for the purpose, a needle electrode being applied to the root of each hair.

D'ÉPINAY, dâ'pé'nâ', MADAME. See EPINAY, MADAME D'.

DÉPIT AMOUREUX, dâ'pét' à'moō'rè', LE (Fr., The Lovers' Quarrel). A comedy by Molière (1654).

DEPONENT. A term in Latin grammar applied to verbs having a passive form but an active signification. They are so called because

they, as it were, lay down (Lat. *deponere*) or dispense with the signification proper to their form. Such verbs had originally a reflexive meaning; thus, *aversor*, 'I shun,' means radically "I turn myself away from"; *versor in*, 'I engage in,' means properly "I turn myself about in." They thus correspond to the middle-voice forms of the Greek verb, which, though properly reflexive, became often indistinguishable from the active voice, so that middle forms were used with a direct object. Consult Lindsay, *The Latin Language*, pp. 519 ff. (Oxford, 1894).

DEPORTATION. See TRANSPORTATION, PENAL; IMMIGRATION.

DEPOSIT, or DEPOSITUM (from ML. *depositare*, from Lat. *deponere*, to lay down). In a legal sense, a term implying possession of personal property by some one not the owner, either by virtue of a delivery thereof, or from some other source as binding, and under such circumstances that he is legally bound to keep it for the benefit of the person who so delivers it, or whoever is, or rightfully becomes, entitled to the possession, and to give up possession at any time, on demand, to such person or persons. It is the most common form of bailment (q.v.), as every case where a person gives another something to hold, or keep for him, for however short a time, comes under this title and is subject to the rules of law governing it. The bailee or depositary, as the person who thus receives the property is called, must take such care of it as a reasonable man would of his own goods; but if he does this, he is not liable for any loss or damage occurring while it is in his hands. The depositary cannot use the property for his own benefit unless there is an express or implied agreement to that effect. Money in a bank to a person's credit, although ordinarily spoken of as a deposit, does not strictly come within the legal use of the term, and is for that reason sometimes designated as an "irregular" deposit. The reason for this is because the bank is only required to return an equivalent amount, and not the particular bills or specie originally delivered to it; and the chief characteristic of a true deposit is that the identical thing is to be kept and returned intact. See BAILMENT; COMMODATUM; DEBT; MANDATE; PLEDGE.

DEPOSITION (OF. *deposition*, Fr. *déposition*, from Lat. *deponere*, to lay down). The testimony of a witness, legally taken and committed to writing, by or in the presence of a judge, referee, commissioner, notary public, or other duly qualified official person. It is usually taken by virtue of a commission or letters rogatory issuing out of the court in which the action is pending or which has jurisdiction of the subject matter if taken before trial.

The questions may be asked orally or may be submitted to the witness in the form of written interrogatories. The legal representatives of all parties to the action or proceeding are entitled to be present and to cross-examine the witness or submit cross-interrogatories to be answered. If the competency of the witnesses or the admissibility of the questions or answers is objected to, the objection may in some jurisdictions be stated to the court or officer taking the deposition, and he may either rule on the question at once, noting the objection, ruling, and exception, or reserve it for the opinion of the court from which the commission issued.

The laws of the state having jurisdiction of

the litigation in which the evidence is to be used regulate the manner of taking the testimony, irrespective of the jurisdiction where it is taken. The competency and admissibility of the testimony are determined by the rules of evidence in force where it is offered in court. Depositions are used in all courts, and they may be ordered taken where witnesses are out of the jurisdiction, or, if within the state, if they are very old and infirm or in feeble health, in order to perpetuate their testimony in case of death before the trial. They cannot be used, however, where the witness himself can be produced. See EVIDENCE; TESTIMONY; LETTERS ROGATORY.

DEPOSITION. The ecclesiastical penalty by which a clergyman is deprived of churchly authority to exercise the functions of his office. As long as ordination was connected with the right to serve in a particular church, the withdrawal of this right was equivalent to exclusion from all clerical rights; but with the development of the clergy as a privileged order, and when absolute ordinations and changes of place became common, deposition in the stricter sense was confined to the withdrawal of local rights, and the term "degradation" came into use in the twelfth century to signify entire removal of clerical rights. Owing to the belief among Roman Catholics that holy orders are indelible, the spiritual powers of a deposed priest are held to remain, but he has no right to exercise them, and if he attempts to do so commits an additional grave sin. In case the penalty is remitted upon his proved repentance, he needs, of course, no reordination. Bishops could formerly be deposed by their metropolitan with 12 other bishops as assessors; the right was later reserved to the Pope. The solemn degradation of a priest, after which there could be no reinstatement, included many awe-inspiring ceremonies, such as the removal, piece by piece, of all the sacred vestments designating the successive orders to which he had attained, the scraping of the thumb and finger which had been anointed at ordination, and the shaving of the head to obliterate the tonsure. At present deposition is rarely inflicted. Dismissal and suspension usually take its place. Only the bishop can depose a priest, and he requires for solemn degradation the assistance of at least six dignified clerics learned in the law.

In England a minister may be deposed by a bishop with the assistance of such of his advisers as may conveniently be had. In Scotland the power belongs to the Church courts. In the United States the power to depose is exercised by the various religious bodies. The reasons which may justify such action are scandalous or immoral conduct, preaching or publishing doctrines contrary to the Church standards, or contumacious disrespect for Church authority. See ORDERS, HOLY; DISCIPLINE, ECCLESIASTICAL. Consult Kober, *Die Deposition und Degradation nach den Grundsätzen des Kirchenrechts* (Tübingen, 1867), and Smitte, *Elements of Ecclesiastical Law* (New York, 1889).

DEPOT, French pron. *dâ'pô'* (Fr. *dépôt*, OF. *depost*, from Lat. *depositum*, deposit, from *deponere*, to deposit, from *de*, down + *ponere*, to put). A place set apart for the storage of munitions of war or other army stores. All the supply departments of the United States army maintain reserve supplies of articles for which each is responsible. The places at which such

supplies are collected are designated quartermaster, ordnance, engineer, signal corps, or medical supply *depôts*. They are located in different parts of the United States with reference to the facility for supplying troops in peace and in war. In addition to these there are five general *recruiting depôts* located at Fort Slocum, N. Y., Columbus, Ohio, Jefferson, Mo., Fort Logan, Colo., and Fort McDowell, Cal., where recruits are received, trained, and distributed. Similarly for the collection of horses, *remount depôts* have been established at Fort Royal, Va., Fort Reno, Okla., and Fort Keoh, Mont. In England and continental Europe generally the name refers specifically to the headquarters of regiments or divisions, or district headquarters of the territorial recruiting system, according to the country and its army organization. In England, in some instances, it has the same application as in the United States. An army in the field is supplied by depôts designated from rear to front, as *base depôts*, *intermediate depôts*, *advance depôts*, *subdepôts*. Consult *Field Service Regulations* (U. S. Army, 1913).

DEPPING, GEORGES BERNARD (1784-1853). A French historical writer. He was born at Münster, Westphalia, settled in Paris in 1803, was employed for a time as a teacher in several institutions, and subsequently contributed to French and German periodicals. He wrote on a wide range of subjects. Two of his juvenile works attained wonderful popularity: *Merveilles et beautés de la nature en France* (1811); and *Les soirées d'hiver*, including the instructions of a father to his children on moral and scientific subjects. He assisted Malte-Brun in his geographical works and published a number of histories, books of travel, and biographies, including: *Histoire des expéditions maritimes des Normands* (1826); *Histoire du commerce entre l'Europe et le Levant depuis les croisades* (1832); *Les Juifs au moyen âge* (1834); *Livre des métiers* (1837); *Correspondance administrative sous le règne de Louis XIV* (4 vols., 1850 et seq.).

DEPRÈS, de-prá', JOSQUIN (c.1450-1521). A Flemish composer, and one of the greatest masters of that time, born at Condé, Hainaut. He was the successor of Okeghem and the immediate predecessor of Lassus and Palestrina in the evolution of music. Little is known of the details of his life, but there is record of his appointment as chapelmaster of Saint-Quentin and that he studied under Okeghem. From 1471 to 1484 he was at the court of Pope Sixtus IV. The library of the Sistine Chapel to this day treasures much of the fruits of his stay in Rome. During his lifetime he visited or held appointments from the greatest princes and courts of the world. Other composers of Josquin's school had developed the custom of taking a secular cantus firmus, the voice to which it was assigned singing the secular words, the remaining voices singing those of the mass proper. So grave an abuse did this custom become that a reform was brought about in Church music, and all such compositions were condemned. Josquin, however, had consistently striven to realize the emotional content of the words of the mass in his compositions so far as he was able. The invention of music printing by movable types at a time (1498) when Josquin was at the height of his fame as a composer did much to make his music universally popular.

Consult Menil, "Josquin de Près," in *Revue Internationale de Musique*, No. 21 (Paris, 1899).

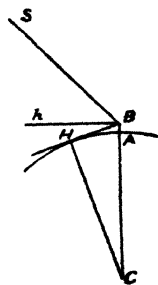
DEPRESSION (Fr. *dépression*, from Lat. *deprimere*, from *de*, down + *primere*, to press), or DIP OF THE HORIZON. The angle through which the sea horizon appears depressed in consequence of the elevation of the spectator above the surface of the water.

Let *A* be a point on the surface of the earth, *B* a point situated in a vertical line from *A*. Let *BH* be a tangent to the earth's surface drawn from *B*, *BA* a line in the same vertical plane perpendicular to *AB*. The angle *hBH* is the *true dip* of the horizon to a spectator at *B*.

The true dip measured in minutes is equal to the distance in nautical miles of the visible horizon. Let *C* be the centre of curvature of the surface; then, since *CHB* is a right angle, the angle *hBH* = *HCA*; and the minutes in this angle are the nautical miles in the arc *AH*.

The true dip of the horizon, however, is not exactly the same as its apparent depression. The apparent sea horizon is raised above its true place by atmospheric refraction through an angle which varies according to the state of the atmosphere and the relative temperatures of the air and water, the variation ranging from one-third to one-twenty-third of the amount of the true dip. The rule commonly employed is to diminish the true dip by about one-fourteenth of its amount, to find the apparent dip.

If *S* be a star or the sun in the same vertical plane with *ABH*, and an observation of the altitude above the sea horizon be made by means of a sextant from the point *B* (as from the deck of



a vessel), the apparent dip of the horizon must be subtracted from the observed angle in order to find the altitude of the sun. Owing to the uncertainty of the amount of refraction, the nearest minute to the dip given in the tables is usually taken. The following table gives a notion of the amount of the apparent dip under ordinary conditions, the air and water being supposed to be at the same temperature:

Height, feet	Dip, "	Height, feet	Dip, "
0	0 0	8	2 46
1	0 59	9	2 56
2	1 23	10	3 6
3	1 42	20	4 23
4	1 58	30	5 22
5	2 11	40	6 12
6	2 24	50	6 56
7	2 36	100	9 48

DEPRETIS, dà-prá'tés, AGOSTINO (1813-87). An Italian statesman, born at Mezzana, in Stradella, Piedmont. He studied and practiced law in Turin, and, as an adherent of Mazzini,

early took an active part in the national movement towards bringing about the unity of Italy, especially after his election to the Piedmontese Chamber in 1848, where he vigorously supported the Opposition. He established in Turin the Liberal journal *Il Progresso*. Cavour appointed him civil Governor of Brescia in 1859, and Garibaldi named him pro-dictator at Palermo in 1860, where he displayed great zeal in urging the adherence of Sicily to the United Kingdom. He held various portfolios in the cabinet in the years 1862, 1866, 1876, and 1879, and was Prime Minister in 1876-78, 1878-79, and 1881-87. He became the leader of the Opposition after Rattazzi's death in 1873, and from 1876 on grew to be a more and more conspicuous figure in modern Italian history, promoting the adoption of many measures, such as the abolition of oppressive taxes, the creation of free ports, and electoral reform. He died at Stradella, where a monument was erected to his memory in 1893.

DEPREZ, de-prâ', MARCEL (1843-). A French engineer and pioneer electrician. He undertook an expensive series of experiments at Munich in 1872 and in 1882 announced that he had succeeded in transmitting power by telegraph wire for a distance of 35 miles, between Munich and Miesbach, which is said to have been the first successful experiment in the transmission of electric power through a considerable distance. Further experiments were successfully carried out on the line of the Northern Railway of France. He became a member of the Academy, professor of electricity at the Conservatoire des Arts et Métiers, and professor of physics at the Collège de France.

DE PROFUNDIS (Lat., Out of the depths). The first words of Psalm cxxx, which forms a portion of the office of the dead in the Roman Catholic church.

DE PRONVILLE, ALEX. See TRACY, MARQUIS DE.

DEPTFORD, dët'fërd (formerly *Depeford*, deep ford'). A former town of Kent and Surrey, England, at the mouth of the Ravensbourne, on the right bank of the Thames, 3 miles southeast of London Bridge, now a metropolitan and parliamentary borough of Greater London (Map: London, E 8). The London cattle market here, covering 30 acres, occupies the site of the historic admiralty dockyard, established by Henry VIII, where Queen Elizabeth in 1581 knighted Drake in the ship in which he had encompassed the world and where in 1698 Peter the Great toiled as a shipwright. It was closed in 1869, but the immense victualing yard for the British navy with its extensive establishments remained, and there are also important marine engineering establishments and electric-lighting plants for illuminating the metropolis. Deptford is a favorite residential section for London merchants. Pop., 1901, of parliamentary borough, 110,398; 1911, 109,398.

DEPUTY (OF *depute*, Fr. *député*, from ML. *deputare*, appoint, select). One authorized by law to exercise all, or certain, of the functions of an office held by another, as an assistant to the incumbent, and accountable to him. Acts done by a deputy in his official capacity are of the same force and effect as if done by the officer himself. A deputy does not need special authority for each particular act, but proceeds under the general powers vested in him by law, although usually his superior may limit his

duties and supervise his work. An officer is generally responsible for the acts and conduct of his deputies to some extent and therefore is usually given the power of selecting and appointing them.

A deputy is required to take an oath of office; his salary is usually fixed by law; and he is frequently required to give a bond for the honest and faithful performance of his duties. Generally only administrative and executive officers, such as sheriffs, constables, county clerks, etc., are authorized to appoint deputies, as judicial officers, even of very limited jurisdiction, are usually accountable only to the government, and not to other officers of a higher rank. See CON-ONER, MARSHAL; SHERIFF.

DEPUTY (in French politics). See POLITICAL PARTIES, France.

DE PUY, de pû, WILLIAM HARRISON (1821-1901). An American Methodist Episcopal clergyman, born at Penn Yan, N. Y. He was educated at Genesee College, Union University, and Mount Union College. He was professor of mathematics in Genesee Wesleyan Seminary (Lima, N. Y.) (1851-55); editor of the *Buffalo Christian Advocate* (1855-59); editor of the *Methodist Almanac*, later called the *Methodist Year Book* (1866-89); assistant editor of the *Christian Advocate* of New York (1865-84). He was also editor of the *Daily Christian Advocate* for the general conferences of 1860 and 1872. His publications include: *Three Score Years and Beyond* (1872); *Compendium of Useful Information* (1878); *Home and Health and Home Economy* (1880); *The People's Cyclopædia of Useful Knowledge*, in 2, 3, and later 4 vols. (1882); *The Methodist Centennial Year-Book, 1784-1884* (1884); *The People's Atlas of the World* (1886); *American Revisions and Additions to the Encyclopædia Britannica* (1891); *University of Literature* (1896). Several of his works have had a large circulation.

DE QUEIROZ. See EÇA DE QUEIROZ.

DE QUINCEY, THOMAS (1785-1859). A great English prose writer. He was born, Aug. 15, 1785, in Manchester, where his father, of the same name, had been a successful merchant in the foreign trade and left at his death an estate producing about £1600 a year; to his son he seems to have bequeathed his love of books. The future essayist as a child was retiring and sensitive; and even before his opium eating had begun, his natural tendency was to live in a dreamworld of his own creation. His somewhat pugilistic elder brother tried without success to develop his character by street fights with town boys. Yet in some directions he made remarkable progress in his studies, especially in Greek, at the grammar schools of Bath and Manchester. "That boy," said one of his teachers, "could harangue an Athenian mob better than you or I could address an English one." At the Manchester school he suffered much from ill health and was unhappy with his fellow students. In 1802 he finally ran away and had a brief adventurous career among the Welsh hills and in London, where he remained a year and nearly starved before he was discovered by his family and sent to Worcester College, Oxford. Here he spent five years, though he left the university without a degree. During this period, in 1804, he resorted for the first time to opium as a cure for severe rheumatic pains in the head; and the habit grew upon him as rapidly and to almost as disastrous an extent as

it did upon Coleridge, gaining a hold upon him which he was never able entirely to shake off, though by 1821 he had succeeded in reducing the quantity sufficiently to allow regular and sustained work. In 1808 he took up his residence on the borders of Grasmere, attracted thither by his affectionate veneration for Wordsworth and Coleridge. Here he enjoyed their society and that of Southey and "Christopher North," read widely in classical, German, and English literature, and began to produce his own magnificent contributions to the latter. Except for his tragic struggle with the opium habit, the events of his later years are not very diversified or striking, and it is difficult to trace them accurately from his own autobiographical remains, which have at times the vagueness and inconsequence of his opium dreams. In 1816 he married and during the rest of his life supported himself and his family almost entirely by his pen, though often embarrassed by the money difficulties which seem inseparable from a certain type of literary genius and which in his case were aggravated by occasional relapses into his besetting sin. From 1819 to 1820 he edited the *Westmoreland Gazette*. After several years (1821-28) spent in London he found it convenient to be nearer *Blackwood's Magazine*, to which he made the first of many contributions in 1826. He therefore settled in Edinburgh, where his family joined him in 1830. After the death of his wife, in 1837, he had his headquarters with his daughters in a cottage at Lasswade, but for his privacy in writing he took lodgings in Edinburgh, often maintaining several workshops of the sort at one time. In one of these lodgings he died, Dec. 8, 1859.

Nearly all his work appeared first in periodicals—*Blackwood's*, *Tait's*, and the *London Magazine*; but its remarkable qualities led to its preservation from the fate of merely ephemeral literature. His first great success was the *Confessions of an English Opium-Eater*, which appeared in the *London Magazine* in 1821 and attracted universal attention. Only a small part of it is devoted to the results of the drug, the rest being a fascinating, if discursive, sketch of the scenes and surroundings of his life up to that time. It was ultimately supplemented by the darker *Suspiria de Profundis* (1845), made up of the marvelous and terrible imaginings inspired by opium. His grim humor is well represented by *Murder Considered as One of the Fine Arts* (1827), and the penetration of his imaginative criticism by his essay *On the Knocking at the Gate in Macbeth* (1823). Special mention may also be made of his *Letters to a Young Man* (1823), of *The Flight of a Tartar Tribe* (1837), and of his essays on *Style and Rhetoric* (1840); on *Joan of Arc* (1847), and *The English Mail Coach* (1849). A series of about 30 articles, collected in 1853 under the title of *Autobiographic Sketches*, is also of great interest. In criticism De Quincey must be regarded very highly; his view of things might be called essentially analytical. His *Literary Reminiscences* embraces broad views of Lamb, Coleridge, Wordsworth, Southey, and others, and there are also studies of Shelley, Keats, Goldsmith, Pope, Godwin, Hazlitt, Landor, etc. It is difficult to find critical matter so luminous and scientific, and the style, at its best incomparable, is as brilliant as the judgments are just.

His great importance to literature lies in the new possibilities which he revealed in English

prose. He has himself in the *Confessions* associated together the names of the seventeenth-century authors who come nearest to being his models in style: "Donne, Chillingworth, Sir Thomas Browne, Jeremy Taylor, Milton, South, Barrow, form a pleiad of seven golden stars such as no literature can match in their own class." But the claim involved in his designation of the *Confessions* and *Suspiria* as "modes of impassioned prose ranging under no precedents that I am aware of in any literature," may be justified by the fact that the gorgeous, colorful, and rhythmical prose in which De Quincey equaled or surpassed his predecessors was in his hands a deliberate and formal style, whose "purple patches" are seldom out of place, and whose majestic and soul-stirring harmonies can be paralleled only among musical instruments by the rich fullness of a great organ. Ruskin is his most conspicuous successor in this style, but it had a wide influence throughout the remainder of the century. His writing is far from faultless, it has two considerable defects—a tendency to lapse, in the midst of a lofty strain, into pointless triviality, and a discursiveness which renders it impossible for him to go straight along the highroad of his main thought without darting off to right and left to explore little green lanes of whimsical fancy or erudite allusion. He will never, perhaps, be a popular writer. He postulates in the reader who is to enjoy him fully too similar an equipment in culture, in imagination, in wide knowledge of books and men; but for that very reason he must remain all the more valued by those who are able to appreciate him—an intellectual luxury and stimulus alike. According to his own famous distinction between the "literature of knowledge" and the "literature of power," it is to the latter class that his own work belongs; and of it may be predicated his general conclusion that such literature will remain "triumphant forever, as long as the language exists in which it speaks."

The first collected edition of his writings appeared in Boston, U. S. A. (1852-55), in 20 vols.; a more complete edition appeared in 1877 in 12 vols. The first English edition appeared in 1853-60 in 12 vols.; a more complete edition in 1862 in 15 vols. For other editions and for criticism, consult: *Collected Writings*, ed. by Masson (14 vols., London, 1889-90); some additional *Uncollected Writings*, ed. by Hogg (ib., 1890); *Posthumous Works*, ed. by Japp (ib., 1891-93); Japp ("H. A. Page"), *Life and Writings of De Quincey* (2 vols., ib., 1877); Masson, *De Quincey* (ib., 1881); Findlay, *Personal Recollections of De Quincey* (ib., 1885); also essays by Saintsbury in *Essays in English Literature, 1780-1860* (1st series, ib., 1890); and Stephen, *Hours in a Library* (ib., 1874-79). There is an excellent study from the scholastic point of view in Minto, *Manual of English Prose Literature* (New York, 1886). Consult also *De Quincey and his Friends*, ed. by Hogg (1895); W. A. Dunn, *Thomas De Quincey's Relation to German Literature and Philosophy* (Strassburg, 1900); H. S. Salt, *De Quincey* (London, 1904); Arvède Barine, *Poètes et névrosés* (2d ed., Paris, 1908).

DE QUINCY. See QUATREMERE.

DE RABUTIN-CHANTAL. See SÉVIGNÉ.

DERA GHAZI KHAN, dēr'ā gā-zē' kân. The capital of a district of the same name, Punjab, British India, on the right bank of

the Indus, 45 miles southwest of Multan (Map: India, B 2). Of many large and handsome mosques the chief are those of Ghazi Khan, Chuta Khan, and Abd'ul Jawar. The chief industries of the district are agricultural; wheat and indigo are exported. The town has silk mills, a cotton-ginning factory, flour and oil mills. Pop., 1901, 23,731; 1911, 18,466.

DERAH, dĕ-râ'. The Egyptian unit of measure of length. The one most in use is 22.37 English inches, or 57 centimeters. The derah is divided into the *kadam*, one-half; the *abdat*, one-sixth; and the *kerat*, one-twenty-fourth. The derah by which dry goods are sold is 25½ inches, while the derah of Constantinople is 66.34 inches.

DERA ISMAIL KHAN, ĕs'mâ-ĕl' kân. The capital of a district of the same name, North-west Frontier Province, British India, 120 miles northwest of Multan (Map: India, B 2). The town, situated 4 miles from the right bank of the Indus, is of modern construction, dating from 1823, when a flood swept away the old town on the river bank. It is surrounded by a thin mud wall with nine gates. An important trade is carried on with Afghanistan, the town being on several of the main caravan routes; and there are two well-equipped bazars where the local manufactures of inlaid woodwork, scarfs, and cotton cloth are traded. Wheat and wool are exported. A military cantonment is stationed here. The old town was founded in the fifteenth century by Ismail Khan, a Baluchi chief whose dynasty lasted through three centuries. Pop., 1901, 31,737; 1911, 35,131.

DERAIYEH, or DERAYEH, dĕ-rî'yĕ (from Ar. *dair*, camp, house). A ruined city of Arabia in the District of Nejd. It was formerly the capital of the Wahabis and residence of the Sultan of Nejd and was a town of considerable importance (Map: Turkey in Asia, R 11). It was destroyed by the Egyptian forces under Ibrahim Pasha in 1818, and since then it has been little more than a small settlement in the midst of the ruins of the old city, with a population of about 1500.

DERAJAT, dĕ-râ-jât' (Ar., camps, pl. of *dair*, camp, house, from *dāra*, to abide). A level plain of the Punjab, British India, in the valley of the Indus. It derives its name from three districts: Dera Ghazi Khan (the most important), Dera Ismail Khan, and Dera Fateh Khan.

DERBE, dĕr'bĕ (Gk. Δέρβη). An ancient city of Asia Minor. Little is known of its history, though from notices in Strabo (535, 567, and 569) it may be inferred that it was a place of some importance. It was the chief city of a district which lay west of the old southern Cappadocian Kingdom of Amyntas and was originally a part of old Lycaonia. In the confusion resulting from the breaking up of the Greek kingdoms of Asia Minor, Derbe, in the first century B.C., became the independent capital of one Antipator, called by Strabo a "pirate," who was conquered by Amyntas about 28 B.C.

Throughout the various changes of local governments incidental to the Roman administration of Asia Minor Derbe continued in possession of the kings of Cappadocia until 41 A.D., when it was incorporated by Claudius into the large Province of Galatia.

Derbe was the last city reached by Paul on his first missionary journey (Acts xiv. 6, 20 f.). Here a Christian church was founded by the

Apostle. On his second and third journeys he again visited the place (Acts xvi. 1; xviii. 23). Since Derbe and its district were governmentally a part of the *Provincia Galatia* in Paul's day, it was probably one of the cities whose Christians were addressed by Paul in the Epistle to the Galatians. See GALATIANS, EPISTLE TO THE.

The district has been carefully examined by Ramsay, after Sterrett, and the site of Derbe fixed as that now occupied by the ruins on and near the mound of Gudelissin, about 45 miles south by east of the modern Konieh (Iconium). Consult: W. M. Ramsay, *The Historical Geography of Asia Minor* (London, 1890); id., *St. Paul the Traveler and Roman Citizen* (New York, 1898); id., *The Cities of St. Paul*, pp. 385-404 (London, 1907), where practically all that is known of the city's history will be found.

DERBENT, or DERBEND, dĕr-bĕnt' (Pers. *Darband*, bond of the gate; Ar. *Bāb al-Abrāh*, gate of the gates, or *Bāb al-Kadīd*; Turk. *Demirkapu*, gate of iron). A seaport in the Caucasian Province of Daghestan, situated on the Caspian Sea and on the railway line from Baku to Petrowsk (Map: Russia, G 6). Its military and commercial importance was considerable before this century. It is surrounded by strong walls and commanded by a citadel. The surrounding district is abundant in gardens, fruit being the chief article of commerce. Cotton and tobacco are also cultivated. The exploitation of bituminous deposits constitutes the city's chief industry. The harbor is unprotected and shallow. The Caucasian or Derbend Wall, a line of fortifications of the sixth century and formerly strengthened by high towers and formidable gates, begins in the vicinity of the town. Another interesting relic of antiquity in the vicinity is the monument of Kirk-Lar or "forty heroes," dating from the conquest of Daghestan by the Arabs in the seventh century. Derbend was taken by the Mongols in 1220 and, after many changes of masters, by the Russians in 1722. After the Treaty of 1723 the town was returned to Persia, only to be formally annexed to Russia in 1813. Pop., about 15,000, of which 57 per cent are Mohammedans.

DERBY, dĕr'bi (Dan. *Derwentby*, *Deoraby*, near the Derwent, Lat. *Derwentio*). A municipal and parliamentary borough and manufacturing town, the capital of Derbyshire, England, in the wide and fertile valley of the Derwent, thence navigable to the Trent, at the junction of the main branches of the Midland Railway, 129 miles north-northwest of London, and 40 miles north-northeast of Birmingham (Map: England, E 4). The town lies mainly on the west bank of the Derwent. The houses are mostly of brick and the public buildings of stone. The most notable of the latter are All Saints' church, with a beautiful Perpendicular tower, 175 feet high, dating from the sixteenth century, the quaint little fourteenth-century chapel of St. Mary-on-the-Bridge, the Roman Catholic church of St. Mary, built by Pugin, a large market hall and corn exchange. Derby sends two members to Parliament. It owns and operates its electric tramways, water supply, an electric-light plant, public baths and washhouses, cemeteries, markets, and slaughterhouses. The net income from corporate property in 1910 was about \$40,000. It maintains a technical school, a free library, museum, and art gallery. The

free grammar school founded in 1160 is one of the oldest institutions of its kind in England. There is also a large general infirmary. Derby is well situated for manufacture and trade, being connected by canals and railways with a great part of England. The Midland Railway has established large works here, which employ over 12,000 men. Since about 1750 Derby has been famous for its porcelain manufacture. Other manufactures are silk, cotton, lace, hosiery, and elastic fabrics. The first silk mill in England was erected on an island in the Derwent in 1718 by John Lombe. There is a resident United States Consular Agent. Pop., 1901, 114,848; 1911, 123,433. Derby is the birthplace of Herbert Spencer, and Erasmus Darwin wrote many of his works and died here. Opposite Derby was the Roman station *Derventio*, which stood on the east bank of the river. Roman brass, silver, and gold coins have been found, as well as a Roman pavement, and the foundations of a Roman bridge. Derby was first incorporated in the reign of Henry I. It was the southernmost point reached by Charles Edward, the Young Pretender, in his attempted march to London in 1745.

DERBY, dĕr'bi. A city in New Haven Co., Conn., 10 miles west of New Haven, at the confluence of the Naugatuck and Housatonic rivers, and on the New York, New Haven, and Hartford Railroad (Map: Connecticut, C 4). An important industrial centre, its manufactures include pins, typewriting machines, pianos, organs, piano players, heavy castings, engines, dairy and other machinery, files, woolen underwear, corsets, hosiery, combs, hairpins, curling irons, keys, guns, and ammunition. There are many places of interest in the vicinity—Sentinel Hill, Indian Well, Lake Housatonic, and the Housatonic Dam, 25 feet high and $\frac{1}{4}$ of a mile in length. Derby contains also the Griffin Memorial Hospital and two libraries. The government is administered by a mayor, elected biennially, and a unicameral council. City meetings are held to issue bonds and for action on matters over which power is not vested in the common council. Pop., 1890, 5969; 1900, 7930; 1910, 8991; 1914 (U. S. est.), 9441. The town was settled about 1646 and was known as Paugassett until incorporated as Derby (from Derby, England) in 1675. It was the birthplace of Gen. David Humphreys, prominent in the Revolution. Until 1889 Ansonia was included within its limits. The city of Derby was formed in 1893 by the consolidation of the town of Derby and the borough of Birmingham, founded in 1834. Consult Orcutt and Beardsley, *The History of the Old Town of Derby* (Springfield, 1880), and *The Town Records of Derby 1655-1710* (Derby, 1901).

DERBY. A border town in Orleans Co., Vt., 100 miles by rail north by east of Montpelier, on the Boston and Maine Railroad, overlooking Lake Memphremagog (Map: Vermont, E 2). It contains the Derby Academy and a public library. Farming, dairying, and lumbering are carried on, and large quantities of granite, which is extensively quarried here, are shipped. Pop., 1900, 3274; 1910, 3639.

DERBY, dĕr'bi, or dār'bi, EDWARD GEORGE GEOFFREY SMITH STANLEY, fourteenth EARL OF (1799-1869). An English statesman. He was born at Knowsley Park, in Lancashire, on March 29, 1799, was educated at Eton and at Christ Church, Oxford, and in 1820, immediately after

leaving the University, he was made a member of Parliament. In 1830 he became Irish Secretary in the Whig ministry of Earl Grey, and by his ability as a debater he rendered very material assistance in the passage of the Reform Bill of 1832. Among his Irish measures were the Education Act, establishing a national board and admitting all children to the schools, but providing for Protestant religious instruction; the Irish Church Temporalities Act, abolishing 10 bishoprics and removing the grievances of first fruits and church rates; and a coercion bill for the trial of Irish rioters by courts-martial. This last measure rendered him unpopular with the advanced Liberals, and he was transferred to the colonial secretaryship in 1833. In that year he distinguished himself by securing the passage of the bill for the abolition of slavery in the West Indies. Becoming alarmed at the intention of the Whigs to appropriate the surplus of the Irish church revenues to purposes of secular education, he left the party in 1834. He soon united with the Tories, and in 1841 he became Colonial Secretary in Peel's ministry. This position he held until 1845, when he resigned because he was opposed to the repeal of the corn laws. He was the recognized head of the Protectionist opposition in the House of Lords, which he had entered as Baron Stanley in 1844, and soon became the leader of the Conservative party. In 1851 he succeeded his father as Earl of Derby. In 1852 the first Derby ministry was formed. But it was of short duration, as were also his second term of office (1858-59) and his third (1866-68), and Disraeli (q.v.) was the leading spirit in all of them. In 1868 he resigned the premiership to Disraeli, and in the following year he died.

Derby was a typical Lancashire magnate of the old school. Traditionally Whig, he left that party because of his repugnance to the rising democracy. While not a statesman of the first rank, he was nevertheless possessed of great ability. His doctrine of free trade with the colonies alone anticipates Conservative doctrine of our own day, and to him, as well as to Disraeli, is due the transformation of the Tories into the modern Conservative party. He was a debater of great ability, excelling especially in invective, and his skill earned him the title of "the Rupert of debate." His passages with O'Connell on the repeal of the Union and the disestablishment of the Irish church are well known. He was a man of high scholarly attainments, who distinguished himself at the university, and was afterward famous for his Latin speeches. He was elected Chancellor of Oxford in 1852 and devoted the leisure of his later years to a metrical translation, or rather paraphrase, of the *Iliad* (published in 1864).

For Derby's speeches, consult Hansard, *Parliamentary Debates* (London, 1803 et seq.). For his life, Keibel, *English Statesmen Since the Peace of 1815: Derby* (London, 1869), and Saintsbury, in Reid, *Prime Ministers of Queen Victoria* (New York, 1892). Consult also Keibel, *History of Toryism* (London, 1866), and Hamilton, in the *Dictionary of National Biography*, vol. liv (ib., 1898).

DERBY, EDWARD HENRY STANLEY, fifteenth EARL OF (1826-93). An English statesman, son of the preceding. He studied at Rugby under Arnold and at Trinity College, Cambridge, where he was one of "the Apostles," and from

1848 to 1869 was a member of the House of Commons. In 1852 he was Undersecretary for Foreign Affairs in his father's cabinet, in 1858 Secretary for the Colonies and the first Secretary of State for India, and in 1866-68 and 1874-78 was Secretary for Foreign Affairs. He definitely left the Conservatives in 1880 and joined the Liberal party. From 1882 to 1885 he was Secretary for the Colonies in Mr. Gladstone's second administration and in 1884 negotiated the London Convention with the Boers. In 1886-91 he was a leader of the Liberal Unionist party. From 1891 until his death he was chancellor of the University of London. Consult the sketch by Lecky prefixed to Lord Derby's *Speeches* (London, 1894), by Sanderson and Roscoe.

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DE RESZKE, EDOUARD and JEAN. See RESZKE, EDOUARD DE; RESZKE, JEAN DE.

DERFFLINGER, dər'fling-er, GEORG, BARON VON (1606-95). A field marshal of Brandenburg, born at Neuhofen, Austria, of a Protestant family. He entered the Swedish service during the reign of Gustavus Adolphus and advanced to the rank of colonel. In 1642 he was sent by Torstenson to negotiate an alliance with George Rákóczy in Transylvania. In 1654 he entered the service of the Elector of Brandenburg. He fought with distinction in the wars against Poland, Denmark, Sweden, and France, and was promoted to the rank of lieutenant general, in consideration of his splendid assault on Warsaw in 1656, field marshal (1670), and military Governor of Pomerania (1678). The formation and training of the cavalry of the electorate were due chiefly to him, and the celebrated battle of Fehrbellin (June 18, 1675) was decided by his brilliant cavalry charge at the head of 6500 horsemen. The conquest of Stralsund and Rügen (1678), where at the age of 72 he led the attack in person, and the subsequent campaign against Sweden, were among his military feats. The military greatness of Prussia in later times was partly due to the influence exerted upon the army of Brandenburg by men like Derfflinger. Consult Unger, *Feldmarschall Derfflinger* (Berlin, 1896).

DERG, dĕrk, LOUGH (Ir., clear lake). The name of two Irish lakes. 1. The larger is an expansion of the river Shannon, between Tipperary on the southeast and Galway and Clare on the northwest (Map: Ireland, C 4). It is 24 miles long from northeast to southwest and 2 to 6 miles broad. Its surface is about 100 feet above sea level; its average depth, 35 feet. It has several islands. 2. A lake in the south of County Donegal, on the border of Tyrone. It is 3 miles long, 2½ miles broad, and has many islets and rocks. On its wild shores are hills rising 700 to 1200 feet. Saint's Island possesses the remains of a priory founded about the year 600 and was the scene of St. Patrick's vision of purgatory. The place of penance on Station Island was for years the most celebrated spot for pilgrimage in Ireland.

DE RIGAUD. See VAUDREUIL, MARQUIS OF. **DERIVATION**. See ETYMOLOGY.

DERIVATION (Lat. *derivatio*, a leading or turning off, from *de*, away, off + *rivus*, small stream, channel, canal). An old term in medicine, descriptive of a method of treating disease, by which it was supposed that the *materies morbi*, or 'matter of the disease,' was drained away through some channel established for it by artificial means, as by a blister applied over an inflamed lung, or a discharge from the bowels established in a case of dropsy. The term is little used now, though applicable to certain methods of treatment as far as results are concerned.

D'ERLON, JEAN BAPTISTE DROUET, COUNT. See ERLON.

DER'MA, or **DER'MIS**. See INTEGUMENT.

DERMATOGEN (Gk. *dĕpma*, *derma*, skin, bark + root, *gĕn-*, *gen-*, to produce, generate; cf. *gĕnos*, *genos*, stock, race, origin). A single layer of superficial cells at growing tips, which gives rise to the epidermis. A true dermatogen is found only in the seed plants (spermatophytes) and in the roots of fern plants (pteridophytes). While a distinct dermatogen is evident in many plants, it is by no means such a definitely differentiated generative layer as was once supposed. See MORPHOLOGY.

DER'MATOLOGY (Gk. *dĕpma*, *derma*, skin + *lōgos*, *logos*, discourse, science). The science of the management of the skin and of its diseases. See SKIN.

DERMATOPHYTES (Gk. *dĕpma*, *derma*, skin, *phŕon*, *phyton*, growth, plant). Cryptogamic vegetable growths, varieties of *Torula*, inhabiting the cuticle or epidermis, and giving rise to some forms of skin diseases, as favus, pityriasis, ringworm (qq.v.), etc.

DERMESTID BEETLES (Gk. *dĕpma*, *derma*, skin + *estheîn*, *estheîn*, to eat, literally 'skin-eater'). A family (Dermestidae) of small or moderately sized and very destructive beetles. Both the adults and the larvae feed on a variety of animal and vegetable substances, making them museum and household pests, preserved meats, woolsens, furs, feathers, silk, and even drugs being exposed to their depredations. The adults, which are oval or elongated and varicolored, feign death when disturbed, falling to the ground, ventral surface upward, and lying stiff with folded legs. The adults may frequently be found outdoors on flowers and on the windows of infested houses. The larvae, which are short and woolly or fuzzy, do far more damage than the adults. There are 300 to 400 species in the family. The most common of them in the United States are the larder or bacon beetle (see BACON BEETLE), the carpet beetle (qq.v.), the museum pest, and the raspberry worm (qq.v.). One form lives on cobwebs, feeding perhaps on the remains of insects caught there and possibly on the web itself. Species of the genus *Attagenus* are responsible for a curious and beautiful kind of felting, resembling moleskin, of pillows and bedticks, which often puzzles housekeepers. The fumes of carbon bisulphide, applied in a tight inclosure, are fatal both to the beetle and the larvae. Carbon bisulphide, however, is very explosive, and its fumes are harmful to man, and hence it should be used with caution. Benzine and naphtha are helpful in keeping these pests from entering stored goods.

DERMIS. See INTEGUMENT.

DERNA, dĕr'nā, or **DERN**. A town of Barca, northern Africa, situated at the mouth of a ravine, 1 mile from the Mediterranean (Map: Africa, Tripoli, G 1). In 1805 it was captured by a force of natives and Americans, led by General Eaton. A fort was begun by the Americans at that time, and stands to-day incomplete. It is the only place on the African continent ever occupied by Americans. Pop. (est.), 7000.

DERNBURG, dĕrn'bŭrk, BERNHARD (1865-). A German administrator, born in Darmstadt. His father was an editor of the *Berliner Tageblatt* and his grandfather a privy councillor. He was educated at the Berlin gymnasium and went into the banking business, being employed for several years in the New York house of Ladenburg, Thalmann & Co. In 1901-06 he was a director of the Darmstädter Bank. His "business" administration (1907-10) of the Colonial Office markedly improved the condition of German colonies, especially German East Africa and German Southwest Africa, which he visited in 1907 and 1908. In 1913 he was nominated a member of the Prussian House of Lords. Consult Bongard, *Dernburg in Britisch- und Deutsch-Ostafrika* (Berlin, 1908).

DERNBURG, dĕrn'bŭrk, HEINRICH (1829-1907). A German legal scholar, born in Mainz.

He was educated at the universities of Heidelberg and Giessen, was appointed a professor at Zurich in 1852, and at Halle in 1862. In 1873 he became professor of Roman law and Prussian common law at Berlin. He represented the University of Halle in the Prussian Upper House from 1866 and the University of Berlin from 1873. His publications include: *Die Institutionen des Gajus* (1869); a *Lehrbuch des preussischen Privatrechts* (3 vols., 1871-80; 5th ed., 1893 et seq.); *Das preussische Hypothekenrecht* (1877; 2d ed., 1891); *Die Phantasie im Rechte* (1894); *Personliche Rechtstellung im Burgerlichen Gesetzbuch* (1896); *System des romischen Rechts* (ed. by W. H. Müller, 1911).

DE ROSNY, de rô'né', LÉON. See ROSNY, LÉON DE.

DÉROULEDE, dā'rō'lad', PAUL (1846-1914). A chauvinistic French poet and political agitator, born in Paris. He wrote: *Chants du soldat* (1872); *Nouveaux chants du soldat* (1875); *Refrains militaires* (1888); *Chants du paysan* (1894); *Poésies militaires* (1896). Déroulède also wrote a patriotic cantata, *Vive la France* (1880); a religious drama, *La Moabite* (1880); and a patriotic play, *L'Hetman* (1877). Other patriotic historical works are *Messure du Guesclin* (1895) and *La mort de Hoche* (1897). Déroulède fought in the War of 1870-71 and subsequently, as the head of the Patriotic League, carried on a passionate agitation for a war of revenge against Germany. He was an ardent supporter of General Boulanger (q.v.). He was a leader of the anti-Dreyfus forces. He was in the Chamber of Deputies from 1893 to 1895 and in 1898-99. In 1900 he was found guilty of plotting against the Republic and sentenced to exile for 10 years, but returned to France in 1905 under a law of amnesty. He stood unsuccessfully as a candidate for election to the Chamber of Deputies in May, 1906.

DERR, Louis (1868-). An American physicist, born at Pottsville, Pa. He graduated at Amherst College in 1889 and studied also at Harvard and at Massachusetts Institute of Technology, where he taught physics after 1892, rising to a full professorship in 1909. From 1893 to 1898 he was also instructor in physics at Boston University and from 1895 to 1908 he supervised the teaching of this subject at the Boston Normal School of Gymnastics. He was elected a fellow of the American Academy of Arts and Sciences. Besides contributing to scientific journals, he edited the *Cyclopaedia of Engineering* (1902; 2d ed., 1912) and published *Notes on the Principles of Dynamo and Transformer Design* (1902; 3d ed., 1905), and *Photography for Students of Physics and Chemistry* (1906).

DERRÉCAGAIX, dër'rā'kā'gā', VICTOR BERNARD (1833-). A French soldier, born in Bayonne. He studied at the College of Saint-Cyr, served in the Crimea in 1854 as lieutenant of infantry, and rose to be lieutenant colonel in 1880. In 1883 he was appointed professor at the Ecole de Guerre and in 1888 became chief of the geographical service of the army. He was promoted in 1895 to be a general of division. He is known for his topographical surveys of France and for his works on military affairs, especially *Etude sur les états-majors des armées étrangères* (1869; 2d ed., 1871); *Histoire de la guerre de 1870* (1871); *La guerre moderne* (1885; Eng. trans. by Foster, *Modern War*, 3 vols., 1888-90).

DER'Rick (from *Derrick*, a Tyburn hang-

man). A device for hoisting heavy loads and conveying them short distances. In ordinary nomenclature the distinction between derricks and cranes is considerably confused. The most common form of derrick consists of a vertical mast pivoted at its bottom in a fixed bedplate and maintained in an upright position by guy cables or other forms of stays, which radiate from a loose collar or spider encircling a pin in the top of the mast; of a boom hinged to this vertical mast near the bottom so that it may be made to assume various inclinations relative to the mast; and of the tackle and motors necessary to impart motion to the boom and mast and to the load which they carry. The load is suspended from the end of the boom by ropes which pass through a block and thence to the motor at the foot of the mast. The end of the boom is sustained by a cable passing through a block at the top of the mast and thence to the motor at its foot. The mast is revolved on its bottom pivot by means of a horizontal wheel around which a rope passes or by some other simple mechanism. The motions permitted by such a derrick are the vertical hoisting of the load, a swinging motion through the rotation of the shaft on its pivot, and a radial motion due to the change in inclination of the boom. Perhaps the most salient distinction between a derrick and a crane is that the boom of the derrick is hinged at its connection with the mast, while the jib of a crane is always rigidly connected with the upright member. If this distinction is maintained in classifying these two sorts of hoisting and conveying devices, however, it throws many devices now called derricks into the class of cranes. Derricks of the type described are extensively employed in quarrying, masonry work, excavating, and building erection, and instead of wooden booms and masts, built-up lattice booms and masts of steel are employed. Such derricks may have a capacity up to 100 tons or more. For "floating derricks," see CRANE.

A hauling derrick, as distinguished from a hoisting derrick, is a drum and the necessary driving gearing from two cranks, mounted in a suitable frame. The rope from the drum leads horizontally to the object to be moved. The hauling derrick is like a geared capstan whose barrel is horizontal instead of vertical, as in the original form.

DERRINGER, dër'rín-jër. A short-barreled pistol of very large calibre and very effective at short range. It was usually carried in the side pocket of the coat, and in emergencies fired without being withdrawn. It derives its name from its inventor, an American gunsmith.

DERRY. See LONDONDERRY.

DERRY. A town in Rockingham Co., N. H., 12 miles southeast of Manchester, on the Boston and Maine Railroad (Map: New Hampshire, G 8). It contains the Pinkerton Academy, a public library, and the homestead of Matthew Thornton, a signer of the Declaration of Independence. The chief industries are shoe manufacturing, milk shipping, and apple raising. There are also manufactories of plant stakes, tree labels, reed ribs, carriages, acetylene-gas machines, and with hazel. The water works are owned by the town. Pop., 1900, 3583; 1910, 5123.

DERRY. A borough in Westmoreland Co., Pa., 45 miles east by south of Pittsburgh, on the Pennsylvania Railroad (Map: Pennsylvania, C 7). It is a summer resort and has bottling and

sand works and manufactories of china and high-voltage insulators. Pop., 1900, 2347; 1910, 2954.

DERVENTIO, dër-ven'shò. The Latin name of the town of Derby (q.v.), in England.

DERVISH (Ar. *darwish*, Pers. *darvish*, poor, Avesta *driyu*, poor; the Persian equivalent of Ar. *fakir*, poor ascetic). In Mohammedan countries, a class of persons who are supposed to lead a peculiarly religious life, resembling in some respects the monks of Christendom. There are many different brotherhoods or orders. D'Ohs-son, in his work on the Ottoman Empire, enumerates 32 and Hammer-Purgstall 36, but the list is far from being complete. The first founders of such orders are supposed to have been Abd al Kadir of Jilan (died 1166) and Ahmad al Rifai (died 1182); and the establishment of orders has gone on until the present time. They live mostly in convents, well endowed, both in land and money, called Tekkije, and are under a chief with the title of Sheikh, i.e., 'elder.' Some of the monks are married and allowed to live out of the monastery, but most sleep there some nights each week. Their devotional exercises consist in meetings for worship, frequent prayers, religious dances, and mortifications. The main devotional exercise, however, is the *zûkr*, which is conducted differently in the different orders. It consists in the repetition of certain formulas, accompanied by violent motions until the dervish falls into a cataleptic state. As the convent does not provide them with clothing, they are obliged to work more or less. Three of the orders—the Bastamiyah, the Nakshabandiayah, and the Bakatashiyah—claim to be descended from the original order established by the first Caliph, Abu-Bekr. Of these, the Nakshabandiayah are the most numerous. In their convents at Cairo and Constantinople and elsewhere they have services on Wednesdays and Sundays, when about 20 performers take part in the *zûkr* ceremony. The orders are spread throughout the Mohammedan world and in India. The most popular one is that of the Muradiyah, to which most of the fakirs belong who crowd the bazars of India. The Rufaiyah (founded 1182) in India, Turkey, and Egypt, are known for their severe discipline and the castigations of their bodies. They are commonly known as the "Howling Dervishes." Another popular order is that of the Kalandariyah, known also as the "Wandering Dervishes," among whom constant traveling is an obligation. The Maulawiyah constitute the order familiarly known as the "Dancing Dervishes." At their *zûkr* they follow one another about the floor in regular order, each with eyes closed and arms extended, turning around in a sort of waltz and intoning a monotonous chant. Each order has its own rules and principles, extending to the dress and the method of wearing the hair and beard. In many of the orders the initiation rites are most elaborate.

Tradition refers the origin of these orders to the earliest times of Islam, making the caliphs Abu-Bekr and Ali found such brotherhoods. While it is certain that Mohammed advocated poverty, the tendencies of thought that led to the founding of dervish orders developed later, when Mohammedanism came into contact with other religions, such as Persian and Hindu. Many Mohammedan princes have held dervishes in high respect and bestowed rich endowments on their establishments, and they are still held in high veneration by the people. For a time,

however, they were regarded with suspicion by the government, since they decline to obey any authority except the religious head of the order. Hence Mahmud II in 1826 attempted to destroy the orders, actually putting to death some of the leaders. His attempt, however, failed. The relation of the dervish orders to the growth of mysticism in Islam and the religious vitality shown in these have been well brought out by Macdonald.

Besides those dervishes regularly affiliated with an order, there are individuals who travel from place to place and by feats of strength or sleight of hand manage to earn a livelihood. Consult: D'Ohs-son, *Tableau général de l'empire Ottoman* (Paris, 1878-90); Hammer-Purgstall, in *Geschichte des osmanischen Reiches* (Pesth, 1827-35); Lane, *The Modern Egyptians* (London, 1836); Malcolm, *History of Persia* (ib., 1829); Browne, *The Dervishes* (ib., 1868); Rinn, *Marabouts et Kholcan* (Algiers, 1884); Chatelier, *Les confréries musulmanes du Hedjaz* (Paris, 1887); Depont et Coppolani, *Les confréries religieuses musulmanes* (Algiers, 1897); Zwemer, *Arabia, the Cradle of Islam* (1900); Jacob, *Die Bektaschijje* (Munich, 1909); Macdonald, *Aspects of Islam* (New York, 1911).

DERVISH PASHA, dër-vèsh' pà-shà', IBRAHIM (1817-96). A Turkish soldier and statesman, born in Constantinople. He studied mineralogy in London and Paris and taught chemistry and physics in the Constantinople military school. He attained the rank of general of division in 1862 and successfully commanded the Turkish forces in the campaign against Montenegro. He was Ambassador to St. Petersburg and then was placed in charge of the civil and military administration of Albania and Syria. He became Governor-General of Bosnia and Herzegovina in 1875 but, failing to quell the insurrection of that year, was recalled. In 1876 he was Minister of War. In the Russo-Turkish War of 1877-78 he distinguished himself by his successful defense of Batum. As Governor-General of Albania in 1880-81 he reestablished Ottoman authority and brought as prisoners to Constantinople the leaders of the revolutionary league, whom he defeated at Duleigno.

DERWENT, dër-wènt (clear water). One of the principal rivers of Tasmania. It issues from Lake St. Clair, in the centre of the island, flows tortuously towards the southeast, passes by Hobart, the capital, and after a course of 130 miles enters Storm Bay, in D'Entrecasteaux Channel, by an estuary 4 miles wide (Map: Tasmania, C 3). The Derwent is navigable as far as Hobart for ships of any burden.

DERWENTWATER, dër-wènt-wa'tër. An oval sheet of water in the south of Cumberland, England, one of the most beautiful lakes of that county (Map: England, C 2). It is 3 miles long, 1 mile broad, 72 feet deep, and 222 feet above sea level. Its banks are rocky and abrupt, and behind them rise rocky mountains, one of which, the Cat Bells, is 1448 feet high; another, Lodore, has a waterfall of 100 feet. Derwentwater is an enlargement of the Derwent River, which flows into the Irish Sea at Workington. It has several wooded isles, besides a remarkable floating isle—a mass of earthy matter, 6 feet thick, varying in size in different years from an acre to a few square rods, covered with vegetation and full of gas bubbles which buoy it on the surface of the water. The lake abounds in trout, pike, perch, and eels.

DERWENTWATER, dər-wənt-wa'tər, JAMES RADCLIFFE or RADCLIFFE, third and last EARL OF (1689-1716). An English Roman Catholic nobleman, one of the leaders in the Rebellion of 1715. He came of an ancient Northumberland family and was born in London, June 28, 1689. He received his education in France and at his father's death in 1705 became Earl of Derwentwater. He joined the Pretender in 1715 with 70 retainers and after fighting with great heroism was taken prisoner at Preston. He was convicted of treason and despite all efforts to save him was beheaded on Tower Hill, Feb. 24, 1716, his rank, youth, amiability, bravery, and simplicity of motives exciting widespread sympathy. His estates were forfeited and given to Greenwich Hospital.

DERZHAVIN, dyər-zhā'vén, GAVRIIL ROMANOVICH (1743-1816). A celebrated Russian lyric poet. Born of a noble family at Kazan, he entered there the newly opened gymnasium in 1759, joined the ranks of the Preobrazhensky Guard Regiment in 1782, became lieutenant captain in 1773, and later entered the civil service. His ode, *Felitsa* (1782), in which he extolled Catharine II, attracted her attention, and through her influence he received many promotions; he was Governor of Olonetz in 1784, of Tambov in 1785, Secretary of State in 1791, and Senator in 1793. Catharine's successor, Paul, appointed him President of the Board of Commerce in 1796, and Alexander I made him Minister of Justice in 1802; but he retired to private life in 1803. His earlier work, in general, was done in imitation of Lomonosov (q.v.). But he soon abandoned this style, for which his gifts were utterly unsuited, and adopted the manner of the odes of Horace. He was the greatest and most original poet before Pushkin and is best known as the "Singer of Catharine," his works forming a poetic chronicle of her achievements. So far from being a court poet, he was a really deep and sincere admirer of the northern Semiramis, with her liberal reforms and democratic leanings, as evidenced in her daily life and correspondence with Voltaire and Diderot. Though occupying a more exalted position after Catharine's death, he never wrote anything about the other monarchs that in power and loftiness of conception could even approach his odes about Catharine and the events of her reign. His language is quite modern in its purity and comparative freedom from Church-Slavonic expressions. Its chief characteristics are vigor united with pliancy, and a vivid imagery that sometimes verges on the hyperbolic. He was the first to introduce everyday expressions into odes, thus bringing down the grand style to modern realism. One of his greatest contributions to the development of Russian poetry consisted in introducing an element of realism and a touch of humor—even of whimsicality—into the labored and remote verse of Lomonosov. His own poetry reflects a clear, satirical mind, good judgment, and sound sentiment. Of his many poems, the ode *God* is the best known, having been translated into most Occidental languages and even into Japanese and Chinese. The best edition of his works appeared in 9 vols. (St. Petersburg, 1864-83), with a commentary and biography by the academician J. Grot. The eighth volume is devoted to the poet's biography.

DÉS, or **DÉES**, dās. The capital of the

Province of Szolnok-Doboka, Transylvania, Hungary, near the confluence of the Great and Little Szamos, 37½ miles northeast of Klausenburg by rail (Map: Austria-Hungary, H 3). Its chief public buildings are the fifteenth-century Gothic Reformed Church, the Thokoly Palace, Franciscan abbey, the handsome town hall and municipal theatre. A sixteenth-century tower is a remnant of the ancient fortifications. Weaving, distilling, and salt mines are among the principal industries. Pop., 1900, 9888; 1910, 11,542.

DESAGUADERO, dà-sā'gwā-dā'rō (Sp., out-let). A river of Bolivia, the outlet of Lake Titicaca. After a southeast course of 190 miles it empties into the landlocked lake of Aullagas, near the town of Oruro (Map: Bolivia, D 7). It is the loftiest stream of any length on the entire American continent, its source being 12,650 feet high.

DESAIX DE VEYGOUX, de-sā' or de-zā' de vā'gōō', LOUIS CHARLES ANTOINE (1768-1800). A French general of the First Republic, born Aug. 17, 1768, at Saint-Hilaire d'Ayat. He studied at the military school of Effiat and in 1783 was made sublieutenant in a Breton regiment. He was in sympathy with the revolutionists, though he deprecated their violence, and in 1792 he was appointed aid to Prince Victor de Broglie, then commanding the Army of the Rhine. In 1793-94 he was made a general of brigade and then of division. He commanded the right wing of the Army of the Sambre and Meuse under Jourdan in 1795, and in the following year was again in the Army of the Rhine and Moselle, under Moreau, commanding the left wing in Moreau's famous retreat through the Black Forest. To Desaix was intrusted the fortress of Kehl, the only stronghold upon the right bank of the Rhine which the French retained after this retreat. The fort was in ruins, but behind its imperfect defenses Desaix held out against an Austrian army for two months, only surrendering in January, 1797, when his ammunition was exhausted. In the spring he was sent to Italy, where Bonaparte, recognizing his strong qualities, took pains to attach him to himself. Desaix accompanied the Egyptian expedition and there won his brightest laurels in the conquest of Upper Egypt from the Mamelukes under Murad Bey, after an eight months' campaign. By his equitable administration of the country after the conquest he won from the Arabs the title of "the Just Sultan." Returning to France at the command of Bonaparte in 1799, he joined the latter in Italy and was given the command of two divisions of reserves. This force, in June, 1800, was sent to Genoa on detached service, but in response to the sound of the distant fighting at Marengo (June 14), Desaix, by a sudden inspiration, returned, arriving just as Bonaparte was about to yield the field to Melas. Desaix saved the day by a vigorous attack with his divisions, but he was shot and instantly killed while leading the charge. He was an intrepid soldier, a skillful commander, and the idol of his troops. His body was embalmed and placed in the monastery of St. Bernard. A statue has been raised in his honor in Paris. Consult: Martha-Becker, *Études historiques sur le général Desaix* (Clermont, 1852); E. Bonval, *Histoire de Desaix* (Paris, 1881); C. Desprez, *Desaix* (ib., 1884).

DE SALABERRY, CHARLES MICHEL D'IRUM-

BERRY (1778-1829). A Canadian soldier. He was born at Beauport, P. Q., and early entering the army was at the conquest of Martinique (1795), accompanied Major General Rottenburg as aid-de-camp in the Walcheren expedition, and was for 11 years in the West Indies under General Prescott. On returning to Lower Canada he organized and commanded the regiment of Voltigeurs, and was a chief of staff in the militia. During the War of 1812 he rendered valuable service. His first success was won near the close of 1812, at Lacolle, against the American General Dearborn; and in 1813, by his superior knowledge of the country through which General Hampton advanced to attack him and also in part by his skillful manœuvring of his troops so as to create the impression of a large force, he defeated that general at Chateauguay, a village about 24 miles southwest of Montreal. This success permitted Gen. Baron de Rottenburg, and afterward his successor, Gen. Sir Gordon Drummond, to resume active operations in Upper Canada. After the close of the war De Salaberry entered political life and in 1818 was appointed a member of the Legislative Council of Lower Canada. He died at Chambly.

DE SANCTIS, dā sŭnk'tēs, FRANCESCO (1817-83). A great Italian critic and teacher, born at Morra, Irpino. Imprisoned for revolutionary activities in 1849, he later went to Malta and Turin (1852); his brilliant lectures on Dante won him in 1856 a professorship at Zurich. Returning to Naples in 1860 as Minister of Public Instruction, he became deputy in 1861, and headed the Education Department of the kingdom in 1861-62, 1878, and 1879-80. He became professor at Naples in 1871. He founded the journal *L'Italia* in 1862. De Sanctis was a great force in the intellectual life of Italy, particularly in the south, where he took up the tradition left by Vico and passed it on re-enforced to the greatest of his successors, Benedetto Croce. His criticism is an advance on the historical methods of Sainte-Beuve and on the systematic intellectualism of the Hegelians: rigorously scientific in procedure, it takes as its point of departure the immediate impression produced by the work of art itself, from that working back to the reconstruction of the consciousness of the author in all its varied aspects. The interpretations of great Italian writers in the *Storia della letteratura italiana*, in *Saggi critici*, and *Nuovi Saggi critici* are all classics, and in some cases seem to be definitive. Consult B. Croce, *Estetica* (Bari, 1908), chap. xv. The works are now appearing at Bari (1913-).

DE SANCTIS, LUIGI (1808-69). An Italian theologian. A distinguished prelate in Rome, he was converted by the study of the Bible and in 1847 fled to Malta, where he became a Protestant. From 1852 he worked as a preacher of the Waldensian congregation in Turin; became, in 1854, the head of the "Chiesa Libera," a radical offshoot of the Waldensians, which body he, however, joined again in 1864, accepting a professorship at their seminary in Florence, where he also established the Protestant periodical *Eco della Verità*. Consult Rŭneke, *Luigi De Sanctis* (Halle, 1890).

DESARGUES, de-zărg', GÉRARD (1593-1662). A French mathematician, especially gifted as a geometer. He was born in Lyons and is chiefly known as one of the founders of modern

geometry. Poncelet called him "the Monge of his century." Desargues and Pascal introduced the method of perspective and treated the conic sections (q.v.) as projections of a circle. Two important theorems are attributed to Desargues, one of which forms the basis of his remarkable theory of homological figures. To Desargues is further due much of the theories of involution and transversals, the elaboration of the conception that a straight line is a curve closed at infinity, and the definition of parallels as lines intersecting at infinity. The works of Desargues were long thought to be lost, but they were found and republished by Poudra in 1864. The chief ones are as follows: *Méthode universelle de mettre en perspective les objets donnés réellement ou en devis, avec leurs proportions, mesures, éloignement, sans employer aucun point qui soit hors du champ de l'ouvrage* (1636); *Brouillon project d'une atteinte aux événements des rencontres d'un cône avec un plan* (1639); *Brouillon project . . . pour la coupe des pierres* (1640); *Gnomonique* (1640). For his biography, consult Poudra, in Desargues's *Œuvres* (Paris, 1864).

DESART, dĕz'art, WILLIAM ULICK O'CONNOR CUFFE, fourth EARL OF (1845-98). An English novelist. He was born in London and was educated at Eton and at Bonn. After serving as page of honor to Queen Victoria, he became lieutenant in the Grenadier Guards (1862) and then captain (1865). Much of his later life was passed in Canada. He died Sept. 15, 1898. He was the author of many novels, among which are: *Only a Woman's Love* (1868); *Children of Nature*, a story of modern London, which caused a sensation (1877); *Kelverdale* (1878); *The Honorable Ella* (1879); *Mervyn O'Connor and Other Tales* (1880); *Lord and Lady Piccadilly* (1887); *Love and Pride on an Iceberg, and Other Tales* (1887); *The Road of the Detrimental* (1897).

DÉSAUGIERS, dā-zō'zh'yā', MARC ANTOINE MADELEINE (1772-1827). A French writer of songs and vaudevilles. He was born at Fréjus and was a son of the composer Marc Antoine Désaugiers (1742-93). He was educated for the ministry at the Collège Mazarin, Paris, but discontinued his studies in order to visit Santo Domingo. His attitude here during the negro insurrection imperiled his life, and he was compelled to seek refuge on an American steamer bound for Philadelphia. In that city he devoted himself for several years to piano-forte instruction. Upon his return to France he acquired a considerable reputation as a writer of songs and vaudevilles and subsequently became director of the Vaudeville Theatre of Paris, a position which he held till his death. Several of his songs are still popular. Among them are *La treille de la sincérité* and *Paris à cinq heures du matin*. The complete works of this amiable and charming writer, who is held by some to surpass even Béranger, were published in Paris in 1827 under the title *Chansons et poésies diverses*. One of his most humorous productions is the one-act vaudeville entitled *Milord Go, ou le diu-huit Brumaire* (1804).

DESAULT, de-zō', PIERRE JOSEPH (1744-95). A French anatomist and surgeon. He became professor of anatomy in Paris in 1776 at the age of 32, was admitted to membership in the corporation of surgeons in the same year, and subsequently held various positions of honor.

In 1782 he was appointed surgeon major to the De la Charité Hospital and came to be regarded as one of the ablest surgeons of his time. He next went to the Hôtel Dieu, and after Moreau's death the surgical department of the hospital was intrusted to him. There he instituted a clinical school of surgery—the first of its type—attracting pupils from all over Europe. He introduced system and precision into surgery and made many valuable improvements in the instruments used in that profession. He established the *Journal de chirurgie* in 1791. His pupil, the celebrated Bichat (q.v.), published his *Œuvres chirurgicales* (3 vols., 1798–1803; 3d ed., 1813; Eng. trans., 1814). Consult Labrousse, *Étude sur la vie et les travaux de Desault* (Besançon, 1867).

DESBARRES, dā'bār', or **DES BARRÉS**, JOSEPH FREDERICK WALSH (1722–1824). An English military engineer and hydrographer. He graduated at the Royal Military Academy of Woolwich and was sent to America, where he was engaged in the French and Indian War as lieutenant of artillery. He was in the expedition against Louisbourg and in the siege of Quebec was aid to Wolfe, who fell into his arms when he received his death wound. From 1763 to 1773 Desbarres was charged with important engineering surveys in Nova Scotia, Newfoundland, and other British colonies, with a view of establishing a chain of military posts. He was also engaged in correcting old and making new charts of the North American coast, which were published in 2 vols. in 1777, under the title of the *Atlantic Neptune*. In 1784 he became Governor of the island of Cape Breton and soon afterward began to build the town of Sydney, where he opened the coal trade. In 1805, at the age of 83, he was made Lieutenant Governor and commander in chief of Prince Edward Island and served until 1813.

DESBORDES-VALMORE, dā'bōrd' vāl'mōr', MARCELINE FÉLICITÉ JOSEPHÉ (1785–1859). A French poet, born at Douai. She began public life as a singer in comic opera (1801), but soon left the stage, and from 1819 till 1843 published sentimental verses of much sweetness and pathos, collected under the suggestive titles: *Élégies et romances* (1818); *Élégies et poésies nouvelles* (1824); *Les pleurs* (1833), *Pauvres fleurs!* (1839); *Bouquets et prières* (1843); *Poésies de l'enfance*. Her popular song "S'il avait su" is in most anthologies. For an elaborate study of her poems, consult Sainte-Beuve, *Nouveaux lundis*, vol. xii (Paris, 1869), and Potez, *L'Œuvre littéraire du Nord dans les temps modernes* (Mme. Desbordes-Valmore, Soudan, A. Samain) (Lille, 1909).

DESBOROUGH, dēz'bōr-ō, JOHN (1608–80). An English soldier, born at Eltisley, Cambridgeshire. During the Civil War he served as captain of horse and as major under his brother-in-law, Oliver Cromwell, and later, becoming colonel, was in command of the forces at Great Yarmouth. His relationship to the Lord Protector led to his preferment to many positions of honor, including a seat in the Council of State, the commissionership of the Treasury, and later also the commissionership of the Admiralty and Navy. He was a member of the parliaments of 1654 and 1656, of the Privy Council in 1657, and in the following year of Cromwell's House of Lords. After Oliver Cromwell's death he joined a conspiracy of officers against the Protector's nephew,

Richard. Restoration following, Desborough was twice imprisoned, fled to Holland, was imprisoned a third time upon his return to England, but was soon released. He was a subject of Butler's ridicule in *Hudibras*.

DESCAMPS, dā'kām', BARON EDOUARD (1847–). A Belgian jurist, born in Bieleil and educated at Namur and Louvain. In 1872 he became professor of international law at Louvain, in 1892 he was chosen a member of the Belgian Senate, and in 1907 he became Minister of Science and Art. He was a member of The Hague (permanent) Arbitration Tribunal and was counsel for the United States in the California Pious Fund case and for Japan in the House-Tax case. Among his published works are: *Les offices internationaux* (1894); *L'Organisation de l'arbitrage international* (1896); *Le droit de la paix et de la guerre* (1898); *La neutralité de la Belgique* (1902); *L'Afrique nouvelle* (1903); *L'Avenir d'Albanie* (1913).

DESCAMPS, dā'kām', JEAN BAPTISTE (1706–91). A French author and painter, born at Dunkirk. He studied painting under Ulin and Largillière and in 1740 founded an academy of painting, sculpture, and architecture in Rouen, where he was professor for many years. There are pictures by him in the Louvre, the Dunkirk Museum, and the Rouen Museum. His subjects were usually peasant scenes, but he also painted a series of episodes from the life of Louis XV. Descamps is best remembered for his *Vies des peintres flamands, allemands, et hollandais* (4 vols., 1753–63), a work formerly much esteemed, but not very critical, and his *Voyage pittoresque de la Flandre et du Brabant* (1759).

DESCANT, dēs'kānt, or **DISCANT** (OF. *descant*, ML. *discantus*, from *dis-*, asunder, apart + *cantus*, song, singing). A term which in mediaeval times was applied to contrary motion in polyphony, as distinguished from the parallel motion of the parts of the so-called *organum*. In modern part music, the highest part, the treble or soprano voice.

DESCARTES, dā'kār't', RENÉ; Lat. RENATUS CARTESIUS (1596–1650). One of the most distinguished modern philosophers, sometimes called "the father of modern philosophy." He was born at La Haye, in Touraine, and was sent at the age of eight years to the Jesuit school at La Flèche, where he soon became distinguished for his keenness of intellect and made great and rapid progress in languages, mathematics, and astronomy. It was not long, however, before he became dissatisfied with the doctrines and method of scholasticism and felt it impossible to acquiesce in what had hitherto been regarded as knowledge. The first thing that he did after leaving school in 1612 was to abandon books and endeavor to efface from his mind all that he had hitherto been taught, that it might be free to receive the impressions of truth whencesoever they should come. In pursuance of his plan he resolved to travel and in 1617 entered the army as a volunteer, serving successively under Maurice of Nassau, son of William of Orange, and under Tilly and Buquoy. However, the life of a soldier contributed little to his main object, and he quitted the army in 1621. After making journeys in different directions, he at last retired in 1629 to Holland, where he prepared most of his works, attracted many disciples, and at the same time became involved in several learned

controversies, especially with the theologians. A work, *Le Monde*, which he had planned to publish the latter part of 1633 he prudently suppressed when he learned of Galileo's condemnation. Although he loved independence, yet in 1649 he accepted an invitation addressed to him by Queen Christina to go to Sweden. His willingness to leave Holland was partly occasioned by his anxiety to escape from the hostility of his enemies. He died only a few months after his arrival at the court of Queen Christina. Sixteen years later his body was brought to Paris and buried in the church of Sainte-Geneviève-du-Mont.

The grand object towards which Descartes directed his endeavors was the attainment of a firm philosophical conviction. The way whereby he sought to attain this end is explained in the discourse on method (*Discours de la méthode*), published in 1637. This small but extremely interesting and important treatise contains a history of the inner life of the author, tracing the progress of his mental development from its commencement in early years to the point where it resulted in his resolution to hold nothing for true until he had ascertained the grounds of certitude. The author in the same treatise also explains the practical rules whereby he resolved to be guided while in this state of suspended belief, and by the observance of which he hoped to arrive at absolute certainty, if indeed it were at all attainable. The result of his inquiries, so conducted, he exhibited more particularly in his *Meditationes de Prima Philosophia* (1641) and the *Principia Philosophiæ* (1644). He begins philosophy anew with a resolve to doubt everything; for might not our beliefs be the result of the mischievous working of some evil demon? One fact he found indubitable—his doubting and his thinking. But in order to think he must exist; hence, in the fundamental fact of psychic experience he believed that he came into knowing contact with ultimate reality—a process of reasoning which Augustine had followed before him. In other words, he could not doubt that he felt and thought, and therefore he could not doubt that *he*, the feeler, the thinker, existed. This relation between consciousness and existence he expressed by the memorable words, *Cogito, ergo sum* (I think, therefore I exist). Upon examining the criterion for the certitude of this knowledge he found it in the clearness and distinctness of his thought about himself. Hence he argued that whatever is as clearly and distinctly thought as self-consciousness must be true. Among these clear and distinct thoughts he first recognized the idea of God as the absolutely perfect being. This idea, he reasoned, could not be formed in our minds by ourselves, for the imperfect can never originate the perfect; it must be innate, i.e., part of the original structure of our understanding, and implanted there by the perfect being himself. Hence, from the existence of the idea of perfection, Descartes inferred the existence of God as the originator of it; he inferred it also from the mere nature of the idea, because the idea of perfection involves the existence of perfection—a form of the so-called "ontological argument." Descartes's reasoning here is as follows: To think of anything as perfect is to think of it as not lacking anything valuable. But to lack existence is to lack something valuable. Hence, to think of anything as perfect is

to think of it as existing. We cannot think of the perfect except as existing. We must think of God, therefore, as existing. But if God exist, then we have a guarantee of the previously determined ground of certitude, for God the perfect being cannot deceive, and therefore whatever our consciousness clearly testifies may be implicitly believed. This Cartesian position, that the truth of a proposition is tested by its clear and distinct intelligibility, is the principle of rationalism (q.v.).

One of the most fundamental general principles of the philosophical system of Descartes is the essential difference between spirit and matter—thinking and extended substances—a difference so great, according to Descartes, that they can exert no influence upon each other. Hence, in order to account for the correspondence between material and spiritual phenomena, he was obliged to have recourse to a constant coöperation (*concursus*) on the part of God—a doctrine which gave rise subsequently to the system called occasionalism (q.v.), the principle of which was that body and mind do not really affect each other, God being always the true cause of the apparent or occasional influence of one on the other. This doctrine received another development in the preëstablished harmony of Leibnitz (q.v.). In Descartes's thought it resulted merely in a strenuous insistence upon the differences between primary and secondary qualities (q.v.). Descartes maintained also that the lower animals belong merely to the world of extension, being unconscious automata. See DUALISM; AUTOMATISM.

Descartes did not confine his attention to mental philosophy, but devoted himself systematically to the explanation of the properties of the bodies composing the material universe. In this department his reforms amounted to a revolution, though many of his explanations of physical phenomena are purely a priori and quite absurd. His corpuscular philosophy—in which he endeavored to explain all the appearances of the material world simply by the motion of the ultimate particles of bodies—was a great advance on the system held up to that time, according to which special qualities and powers were assumed to account for every phenomenon. It was in pure mathematics, however, that Descartes achieved the greatest and most lasting results, especially by his invention of the analytic geometry, which is known from his name as Cartesian. In developing this branch of mathematics he had in mind, not the revolutionizing of geometry, but the elucidation of algebra by means of geometric intuition and concepts. He intended to establish a universal mathematic, to which algebra, arithmetic, and geometry (with its applications) should be entirely subordinate. He discarded Vieta's improvements in algebraic symbolism, introduced the present plan of representing known and unknown quantities, gave standing to the present system of exponents, placed the theory of negative quantities on a satisfactory basis, and set forth without demonstration the well-known rule for finding the limit of the number of positive and negative roots of an equation through inspection of the variations in the signs. While his expectations were, in one sense, not fulfilled, he nevertheless succeeded in imparting a powerful impulse to the progress of mathematics and in

giving to the science its modern trend. The establishment of a correspondence between geometry and analysis has been of incalculable assistance to both, and Descartes's invention may be said to constitute the point of departure of modern mathematics. In 1637 he published at Leyden a treatise entitled *Discours de la méthode pour bien conduire sa raison et chercher la vérité dans les sciences* (Eng. trans. 1850; recent ed., Chicago, 1903). This was followed in the same year by three appendices entitled *La dioptrique*, *Les météores*, and *La géométrie*. The new mathematical discipline was set forth entirely in the *Géométrie*. The first part shows how arithmetical operations may be represented geometrically by taking a certain unit of length, in which lay the sole novelty of the plan. The second part shows how to trace algebraic (which he calls geometric) and transcendental (which he calls mechanical) curves, explaining the use of coordinates and setting forth the general scheme (now discarded) of classification of curves according to the order of their equations. The third part treats of the theory of equations. The appearance of the *Géométrie* placed Descartes foremost among the mathematicians of his time.

His works in Latin were published at Amsterdam (1650). Modern editions of his collected works are those by Cousin (Paris, 1824-26), and by Adam and Tannery (ib., 1897-1910) in 12 vols., the last being devoted to an historical study of Descartes's life and works by Adam. English translations of portions have been made by Veitch (Edinburgh, last ed., 1907), by Lowndes (London, 1878), and by Torrey (New York, 1892). Consult. Mahaffy, *Descartes* (Edinburgh, 1881); Millet, *Descartes, sa vie, ses travaux, etc.* (Paris, 1867). Fouillée, *Descartes* (ib., 1893); Fischer, *Geschichte der neuern Philosophie*, vol. i (Heidelberg, 1897); Boutroux, *L'Imagination et les mathématiques selon Descartes* (Paris, 1900); Smith, *Studies in Cartesian Philosophy* (London, 1902); Iverach, *Descartes, Spinoza, and the New Philosophy* (New York, 1904); Hoffmann, *René Descartes* (Stuttgart, 1905); Haldane, *Descartes. His Life and Times* (London, 1905).

DESCARTES'S RULE OF SIGNS. According to this rule no numerical algebraic equation can have more positive roots than it has changes of sign from + to - and from - to + in the terms of the first member. By substituting $(-x)$ for (x) in $f(x) = 0$, the law may be applied to the case of negative roots. It is often possible to detect the existence of imaginary roots in equations by the application of this rule; for if it should happen that the sum of the greatest possible number of positive roots, added to the greatest possible number of negative roots, is less than the degree of the equation, we are sure of the existence of imaginary roots. The rule also bears Harriot's name, being given in his *Artis Analyticae Praxis* (London, 1631). Consult Burnside and Panton, *Theory of Equations* (Dublin, 1899-1901), and Matthiessen, *Grundzüge der antiken und modernen Algebra der literalen Gleichungen* (2d ed., Leipzig, 1896). See DESCARTES.

DESCAVES, dá'káv', LUCIEN (1861-). French novelist and playwright, born in Paris. In 1900 he was elected a member of the Académie of the Goncourts. His novels include: *Le*

calvaire d'Héloïse Pajadou (1882); *Les sous-offs* (1889); *Les emmurés* (1894); *La colonne* (1901). For the stage he wrote: *La Clavière* (1899), with Donnay, and *L'Attentat* (1906), with Capus; *La Préférence* (1907); *La vie douloureuse de Marceline Desbordes-Valmore* (1910).

DESCENDANTS (from Lat. *descendere*, to descend, from *de*, down + *scandere*, to climb, Skt. *skand*, to spring). The issue of an individual, including all who have proceeded or descended from the issue of his body in any generation or degree. By American as well as English law, descendants take precedence over collateral relations and ascendants (q.v.) in the inheritance of the property of a deceased ancestor. See COLLATERAL; CONSANGUINITY; DESCENT. HEIR.

DESCENT. The transmission of real property by operation of law to the heir or heirs of one who dies intestate. It is a principle common to most if not all legal systems, that the property of a decedent, if not otherwise disposed of by him, shall pass in a fixed line of descent to those related to him by ties of blood. Under some systems, as that of Rome, no distinction was made between the two classes of property which we distinguish as real and personal, the whole passing, along with the liabilities of the owner, to a personal representative, and this has been the nature of descent generally, both in ancient and in modern nations. In the common-law system of England and the United States, however, a different principle has prevailed, only the personal property passing to the representative of the deceased, the real property devolving upon a descendant, who became known as the heir. The personal representative was not necessarily a descendant, nor even related by any ties of consanguinity to the decedent, and the use of the term "descent" was therefore confined to the devolution of the real property—the terms "administration" and "distribution" being employed to describe the corresponding disposition made of the personal property after the owner's death. The transmission of the real property to a different individual from the one whose title, as personal representative, was affected with the obligation to pay the decedent's debts, was a consequence of the feudal system, and was due, among other things, to the necessity of holding the lands together, free from claims on the part of others than the feudal lords of whom the lands were held.

The exceptional and peculiar character of the law of land at the common law, due to its complete absorption in the feudal system, is strikingly exemplified in the history of the doctrine of inheritance. There was at first no general recognition of the right to transmit freehold lands by descent, nor to alienate them without the consent of the lord of whom they were held, and the right to dispose of one's real estate by will was not conceded until the reign of Henry VIII. The right of inheritance, once acquired, was strictly limited to freeholds which were in terms granted to a man and his heirs, and did not extend to such as were granted to a man absolutely, but without an express limitation to heirs. The latter, therefore, fell into the category of life estates, while the quality of heritability became the chief characteristic of the estate known as a fee. Thenceforth freehold estates were classified as "freeholds of inheritance" and "freeholds not of inheritance." It is with

the former, only, that the law of descent has to do. The right of free alienation of lands held in fee was not acquired until the quality of heritability had come to be considered an essential characteristic of such lands, and such alienation was long regarded as an infringement upon the expectant rights of the heir as well as upon the reserved rights of the lord of whom the fee was held. To-day, however, no fee can exist without possessing both the quality of free alienability and that of heritability within the limits prescribed by the laws of descent, and an attempt to create a fee which shall lack either of these characteristics is ineffectual and void.

The exigencies of the feudal system determined the course as well as the fact of descent at common law. The importance of holding an estate together, in the hands of a single heir, and that a male, nearest in blood to the decedent, fixed the canons of descent as they existed in England from the twelfth to the nineteenth century. Originally, it is true, and down to the time of Glanville (twelfth century), lands held by the tenure of free and common socage were governed by different rules from those which regulated the inheritance of military fees, or lands held by knight's service, and on the ancestor's death were divided among all his sons equally; but long before the time of Littleton this distinction had disappeared and all lands held in fee simple came under the operation of the feudal rules.

Briefly stated, these rules were as follows: 1. Inheritances shall lineally descend to the issue of the person who last died actually seised thereof, *in infinitum*, but shall never lineally ascend. A father or mother cannot inherit directly from a son or daughter. 2. The male issue shall be admitted before the female, to the total exclusion of the latter. 3. Where there are two or more males in equal degree of consanguinity to the ancestor, the eldest only shall inherit; but, there being no male of equal degree, the females inherit all together. 4. The lineal descendant *in infinitum* of any person deceased, who, if he had survived, would have been the heir, shall represent their ancestor, i.e., shall stand in the same place in the line of descent as he would have occupied, if living. Thus, the issue, whether male or female, of the eldest son will be preferred to the younger son or the daughter of the deceased ancestor. 5. On failure of lineal descendants, or issue, of the person last actually seised of the lands, the inheritance shall pass to his collateral relations of the blood of the first purchaser (i.e., of the first in the line of ancestors to transmit it by descent, having acquired it himself in some other way), on the same terms as to preference of males, primogeniture, etc., as it would have passed to issue if there had been any. Thus, an elder brother, or his issue, will take the inheritance to the exclusion of sisters and younger brothers. 6. The collateral heir of the person last seised must be his next collateral kinsman of the whole blood. The half blood is wholly excluded from the line of descent. 7. In collateral inheritances the male stocks shall be preferred to the female; i.e., kindred derived from the blood of the male ancestors, however remote, shall be admitted before those from the blood of the female, however near, unless, indeed, the lands have descended from a female ancestor, in which case the rule is reversed and the female stock preferred to the male.

These common-law rules of descent have been changed in some important respects by the Inheritance Act (3 and 4 Wm. IV, c. 106). The famous rule of primogeniture, embodied in the second canon and the first part of the third, remains unchanged, notwithstanding its complete rejection by the United States and the self-governing colonies of Great Britain as well as by the nations of continental Europe. The second half of the second canon and the seventh also remain unaltered. The first has been changed by deriving the descent from the last purchaser instead of the person last actually seised, and by admitting lineal ancestors in default of lineal descendants and in preference to collateral heirs. The sixth canon has also been altered by admitting collateral relations of the half blood in default of relations of the whole blood in the same degree.

So far as they are applicable, these common-law rules of descent govern all common law, as distinguished from customary inheritances, including the descent of fee-tail estates. These are the result of legislation of the end of the thirteenth century, and, as they are expressly limited to heirs of the body, i.e., to lineal descendants only, the rules relating to collateral inheritance have no application to them. Even the canons governing lineal inheritances, however, may be varied by the form of the fee tail, as a fee tail special, which confines the inheritance to the issue of a certain wife, a fee tail male (which may be general or special) which limits descent to the male issue, etc.

So, too, while the common-law rules have to a great extent come to be applied to copyhold estates, whose qualities are largely determined by local custom, they have no application whatever to certain other classes of customary estates. Thus, lands held by the custom of gavelkind (q.v.), which is the prevailing tenure in Kent and which occurs elsewhere, are still governed by the old rule of socage tenure and pass to the sons of the decedent equally, while in the case of lands held by the ancient tenure of borough English (q.v.) the common-law rule of primogeniture is reversed, and the inheritance passes to the youngest son. And it may be said, in general, that in many manors and boroughs in England the course of descent of certain lands may still be governed by local customs of great antiquity, which have successfully resisted the encroachments of the feudalized common-law doctrine.

In the United States there is much diversity in the law of inheritance. The course of descent is everywhere regulated by legislative enactment, and the statutes of the several States must be consulted by any one who desires to master its details. But there is a general and essential uniformity in the outlines of the law governing the matter throughout the nation.

In the first place, the law of the descent of real property has generally been kept distinct from that of the distribution of personal property, and the heir from the personal representative. In the second place, the descent of real property is still confined to those who are of the blood of the decedent, excepting in a few States in which the wife and the husband have been placed in the line of inheritance. In the third place, the principle of priority according to the degree of consanguinity has been preserved, the relatives of one degree not being entitled to share in the inheritance if there is any

representative of a higher degree living. In the fourth place, the rules in accordance with which the degree of consanguinity of collaterals is computed have generally in the United States been changed to those of the civil law, being the aggregate of both parties from the common ancestor.

On the other hand, as has been said before, the rule of primogeniture has been universally rejected in the United States, and with it the feudal preference of the male over the female heir. All the children of the decedent, and all the relatives of equal degree, share alike, usually as tenants in common, without distinction of age or sex. Generally, also, the disability of the half blood has been wholly or partially removed, and half brothers and sisters permitted to share equally with those of full blood, or, as now in England, admitted immediately after the latter. In all States the father and mother, and in some States all lineal ancestors, are admitted to the inheritance, usually immediately after lineal descendants and before the collaterals. The principle of representation has also been retained, but in general the descent is traced, not from the person last actually seised, as at common law, nor from the last purchaser, as under the present English statute, but from the person last entitled. The canons of descent, as given above from Blackstone, do not in terms exclude illegitimate children, but no principle of the common law is better established than the rule which denies the right of inheritance to a bastard; only persons born in lawful wedlock are within the legal limits of consanguinity, and no others are capable of lineal or collateral inheritance. This principle has been maintained in all its rigor in England and has been generally observed in the inheritance laws of the United States, but with the following exceptions and modifications. In most of the States illegitimate children inherit from the mother equally with legitimate children, in one State (New York) only in case the mother has no legitimate issue, and in one (Kansas) from the father also, if his recognition of them is notorious. In many of the States the milder rule of the civil and canon laws, that the subsequent marriage of the parents legitimates previously born children, has been adopted.

It remains to be said that the law of descent of a given jurisdiction is immutable and not to be varied by any form of grant or conveyance. An estate may, indeed, be taken out of its operation by previous conveyance or by last will and testament, but if real property be left undisposed of it passes according to an iron law of inheritance and not otherwise. No limitation of an estate to a different class of heirs, no provision excluding an individual or a class of individuals, has any validity. To attempt to create a different line of descent from that established by law, as by granting lands to A and his male heirs only, or to B and his paternal line only, is to undertake the creation of a novel kind of estate, unknown to the law and therefore not to be tolerated. Such a conveyance, if it creates an estate of inheritance at all, is at once subjected to the established rules of descent and the particular restrictions imposed by the donor disregarded. The only exception to this principle is the case of the fee-tail estate, referred to above, and that is only an apparent and not a real exception, the qualities of the various kinds of fees tail being as clearly defined as are those of the ordinary

estate in fee simple. Consult: Blackstone, *Commentaries on the Laws of England*; Williams, *Principles of the Law of Real Property* (17th (International) ed., London and Boston, 1894; 19th Eng. ed., 1901); Jenks, *Modern Land Law* (Oxford, 1899); Digby, *An Introduction to the History of the Law of Real Property* (5th ed., ib., 1899); Pollock and Maitland, *History of English Law* (2d ed., Cambridge and Boston, 1899); Washburn, *Law of Real Property* (6th ed., Boston, 1902). See DISTRIBUTION; EXECUTOR; HEIR; INHERITANCE; and the titles of the various kinds of estates, as FEE SIMPLE; FEE TAIL; ETC.

DESCENT CAST. A doctrine of the ancient common law in England, whereby the right of entry of a person who had been disseised of lands was barred by the death of the adverse holder and the descent of the lands to the latter's heir. Entry upon lands was formerly by far the most convenient and expeditious method of recovering them from a disseisor, but so important in legal effect was the fact of actual possession by him, however wrongful, that he was invested with an inheritable title, and the passing of this title by descent operated as a limitation upon the right of entry of him who had been disseised. In the technical language of the common law, "a descent cast tolls [i.e., bars] entry." This effect of a descent cast might be avoided by the procedure known as making continual claim, which consisted in an annual demand for possession made by the claimant upon the disseisor. If such claim was made within a year and a day of the disseisor's death, the right of entry of the disseisee was saved. A descent cast had no effect upon the right of a claimant of lands to pursue his remedies by action, but only upon the summary process of entry. See ENTRY, RIGHT OF; DISSEISIN; LIMITATION.

DESCHAMPS, dâ'shân', EMILE DE SAINT-AMAND (1791-1871). A French poet, born at Bourges. To forward the cause of romanticism, he founded with Victor Hugo *La Muse Française* (1824). To this journal he contributed verses and stories signed "Le Jeune Moraliste." Four years afterward he collected and published *Etudes françaises et étrangères* (1828), consisting of poems and translations. The preface of this book, an enthusiastic defense of the Romantic school, won the approval of Goethe. His other publications include: *La paix conquise* (1812), an ode which won the praise of Napoleon; *Contes physiologiques* (1854); *Réalités fantastiques* (1854). His *Œuvres complètes* were published in 6 vols. (1872-74).

DESCHAMPS, EUSTACHE (called MOREL because of his dark complexion) (c.1340-c.1410). A French poet. He was born at Verlus, studied law at Orléans, and was appointed bailli of Senlis by the Emperor Charles VI. His life was that of a popular trouvère. His verse, like most of that of his time, is quite artificial and possesses chiefly an historical value. One of his ballads is addressed to Chaucer. In addition to ballads and rondeaus, he wrote a *Miroir de mariage* in 13,000 lines, which contains the prototype of the mother-in-law so frequently found in French farces, and *De l'art de dicter*. His *Œuvres complètes* were edited by Saint-Hilaire (11 vols., 1878-1903). Consult E. Hoepfner, *Eustache Deschamps* (Strassburg, 1904).

DESCHANEL, dâ'shâ'nêl', EMILE AUGUSTE ETIENNE MARTIN (1819-1904). A French critic and author, born in Paris. He became professor of rhetoric at the Normal School there, and the contributor of critical articles to the *Revue des Deux Mondes*. His essays on *Catholicisme et socialisme* (1850) brought him into difficulties with the government. He was arrested following the coup d'état of Dec. 2, 1851, and was expelled from France. He took refuge in Belgium, where he met Victor Hugo. On his return to his native country Deschanel became one of the editors of the *Journal des Débats* (1859). He was elected deputy in 1876 and reelected in 1877. In 1881 he was made professor of modern literature in the Collège de France and in the same year was elected a senator. His works include: *Les courtisanes grecques* (1859); *Histoire de la conversation* (1857); *Etudes sur Aristophane* (1867); *Le romantisme des classiques* (1882; 2d ed., 1883); *Racine* (1884); *Le théâtre de Voltaire* (1886); *Lamartine* (1893).

DESCHANEL, PAUL (EUGÈNE LOUIS) (1856-). A French statesman and author, born in Brussels, where his father, Emile (1819-1904), a former senator, had been exiled for opposition to Napoleon III. He was secretary to Marcères and to Jules Simon, and entered the administration as Vice Prefect in 1877. As an orator in the Chamber of Deputies, to which he was first elected in 1885, he displayed great eloquence. He was a leader of the Progressist Republicans and a strong exponent of the separation of church and state. From 1898 to 1902 he was President of the Chamber, and being again chosen to this office in 1912, he was reelected in 1913 and 1914. In 1899 he was elected to the French Academy, and in the same year he received 10 votes (Loubet, 483) for President of the Republic. He wrote: *La question du Tonkin* (1883); *La politique française en Océanie* (1884); *Les intérêts français dans l'Océan pacifique* (1887); *La décentralisation* (1895); *La question sociale* (4th ed., 1898); *La république nouvelle* (3d ed., 1898), a collection of speeches; *Politique intérieure et étrangère* (1906).

DESCHUTES (dâ'shûot') **RIVER** (Fr., the falls). A river which rises in the Cascade Range in Klamath Co., Oreg., flows north by east through Crook and Wasco counties, and empties into the Columbia River (Map: Oregon, D 5). It is about 320 miles long, and for 140 miles of its course it cuts into the great lava bed of the Northwest. The river has made a cañon, ranging from 1000 to 2500 feet in depth and exposing on its sides at least 130 layers of lava one above another.

DES CHUTES INDIANS. See WARM-SPRING.

DES CLOIZEAUX, dâ klwâ'zô', ALFRED LOUIS OLIVIER LEGRAND (1817-97). A French mineralogist, born at Beauvais (Oise). After scientific study and travel he was appointed assistant instructor in the Ecole Centrale des Arts et Manufactures and subsequently lecturer at the Ecole Normale. He was elected in 1869 to the Academy of Sciences. In 1876 he became professor of mineralogy at the Muséum d'Histoire Naturelle. He made important investigations in regard to the optical properties of crystals, particularly with a view to establishing a basis for a crystallographic system, and discovered the triclinic potash feldspar known

as microcline (KAlSi₃O₈) and the circular polarization of cinnabar. He published: *Leçons de cristallographie* (1861); *Manuel de minéralogie* (2 vols., 1862-93); *Nouvelles recherches sur les propriétés optiques des cristaux* (1867).

DESCLOT, dê-sklô' (DESCLOS, DES CLOT, ESCLOT, SCLOT), BERNAT. A Catalan historian in the latter half of the thirteenth century. He wrote a *Libre del rey En Pere*, the oldest important composition in the Catalanian language. While as an historical narrative it is skillful and reliable, its chief interest is linguistic. The original text was first published and edited by Buchon under the title *Chroniques étrangères relatives aux expéditions françaises pendant le treizième siècle* (Paris, 1841), although it had appeared (in Barcelona) in a Castilian translation by Rafael Cervera as early as 1616, and (in Madrid) in a second Castilian edition in 1793.

DESCRIPTIVE GEOMETRY. See GEOMETRY; MONGE.

DESDÉMONA. The young wife of Othello in Shakespeare's tragedy of the latter title, smothered by her jealous husband at the instigation of Iago. This is said to be the first character impersonated by an actress on the English stage.

DESDÉN CON EL DESDÉN, dâs-dân' kôn ël dâs-dân', E. (Sp., Disdain with Disdain). A play by Moreto, produced about the middle of the seventeenth century. It was translated into English by Westland Marston (1864), from the German version of Schreyvogel.

DE SENECTUTE (Lat., On Old Age), or **CATO MAJOR.** A popular essay by Cicero, applying the principles of philosophy to the endurance of the ills incident to old age. It was composed in 45 or 44 B.C., and is dedicated to Atticus. Scipio and Lælius are represented as meeting at the home of the elder Cato, in 150 B.C., and admiring the manner in which he bears his age.

DESERET, dêz'êr-ët, **STATE OF.** The name given by the Mormons in 1849 to their settlement in the present State of Utah, *deseret* being a word taken from the Book of Mormon and meaning "land of the honeybee." In September, 1850, Congress created the Territory of Utah, and the old name gradually fell into disuse. See UTAH; MORMONS.

DESERONTO, dêz'êr-ôn'tô. A town of Hastings Co., Ontario, Canada, the best harbor on the Bay of Quinte, an inlet of Lake Ontario, 130 miles east of Toronto (Map: Ontario, G 5) and 200 miles west of Montreal. It is on the Canada Northern Railway, which connects it with the Grand Trunk and the Canadian Pacific railways. It also has steamship connection with all Canadian and American ports on the St. Lawrence River and the Great Lakes. The manufactories include a blast furnace, cannery, machine shop, and saw mills, and their products are boxes, cars, matches, sashes and blinds. Abundant supplies of lumber and fruit are in the surrounding district. The town owns the gas, sewerage, and water systems. The United States is represented by a consular agent. The beautiful Foresters' Island Park is near Deseronto. Pop., 1901, 3527; 1911, 2013.

DESERT, dêz'êrt (Fr. *désert*, Lat. *desertum*, from *deserere*, to abandon, from *de*, from + *serere*, to bind). A region which supports little plant and animal life. As thus defined, the term includes all barren areas, whether their barren-

ness is caused by intense cold, lack of soil, or by insufficient moisture. Greenland, southern Patagonia, and the Arctic and Antarctic lands in general are deserts, determined as to character by their situation in high latitudes. In common usage, however, the term is limited to the great continental wastes lying within the tropical and temperate zones which are scantily watered by rains. The most extensive of these arid deserts are found in Asia, Africa, and Australia; they are much less extensive in area in North and South America, and in Europe they scarcely occur. The Sahara Desert is a part of an arid belt that reaches from the Atlantic coast across the northern limb of Africa to the Red Sea and is continued through Arabia, Persia, Turkestan, Sungaria, and Mongolia, almost to the Pacific shores of Asia. The eastern extension of this belt, which is wider than the central portion, is known as the Desert of Gobi. In South Africa the Kalahari Desert occupies a large area between the Zambezi River on the north and the Orange and Limpopo rivers on the south. The arid regions of Australia are situated in the central part of the continent and are of vast extent. The Atacama Desert, in northern Chile, and the Colorado Desert, in California, are of comparatively limited area, but they furnish perhaps the best illustrations of regions in America having an arid climate.

The arid deserts vary greatly in surface conformation, and often they are far from having the monotonous character which popular imagination has ascribed to them. The Sahara Desert consists essentially of a series of elevated plains rising in terraces to altitudes of several thousand feet. Within its compass there are sandy stretches with the surface formed by the winds into shifting dunes, and great areas underlain by stratified rocks, where the surface is strewn with boulders and has been deeply eroded by the rivers that existed in past ages. Oases are found at intervals in deserts wherever there are natural springs or mountains of sufficient height to cause precipitation. The date palm and other food plants may flourish here, while in the less favored regions the plant life is limited to representatives of the more hardy families, such as cacti and artemisia. Under exceptional conditions, such as exist, e.g., in parts of the Sahara, artesian wells may supply water for irrigation; such supplies are found in porous strata like sandstones that come to the surface in some remote region of plentiful rainfall. The dryness of the desert climate and the scanty vegetation give rise to rock sculpturing in columnar, tabular, and fantastic forms. Violent windstorms, accompanied by whirlwinds, cloudless skies, extraordinary heat by day and rapid fall of the temperature at night, and an annual rainfall that varies from a few inches to an immeasurably small amount, are characteristic meteorological features.

The small rainfall, upon which the aridity of deserts depends, is due to the following causes: prevalence of dry winds; isolation by mountain barriers along the borders; great distance from areas of evaporation, or oceans. The Sahara is an illustration of a desert caused by dry winds. In the northern part the prevailing winds blow from the northeast, and rain falls only in winter, when cyclonic storms from the Atlantic pass over the region. The moist winds that have their source in the Gulf of Guinea bring rain to the southern Sahara, but in small amounts only,

as their temperature—and consequently their capacity for holding moisture—is increased before they reach far into the interior. A similar condition prevails in the Desert of Atacama, where the prevailing winds are from the south. When mountain ranges occupy the borders of a region, the winds are deprived of their moisture before they pass beyond the interior slopes. Thus, the Kalahari Desert receives a very small rainfall from the east winds, which bring an abundance to the region lying between the South African highlands and the Indian Ocean. In America the arid region of Nevada, Utah, and Arizona is shut in from the Pacific Ocean by mountains. Finally, desert conditions may prevail in regions situated at great distances from oceans, owing to the gradual precipitation of moisture as the winds travel inland. The exploration of the deserts of Central Asia by Sven Hedin, Huntington, and others has brought to light numerous evidences of ancient cultivations which would appear to indicate that the present dry climate is a relatively recent development. This circumstance may be explained perhaps as the result of the evaporation of former lakes which came into existence during the Glacial epoch, and which for a long time thereafter may have provided sufficient moisture to give a moderate rainfall to that section. Consult Neumayr, *Erdegeschichte* (Leipzig, 1895), and Walther, *Das Gesetz der Wüstenbildung in Gegenwart und Vorzeit* (Berlin, 1900).

DESERTED VILLAGE, THE. A poem, partly descriptive and partly declamatory, by Goldsmith (1770). See AUBURN.

DESERTION. A military offense, consisting in abandoning the service with the intention of not returning to it. To prove this offense it is necessary to show absence without leave and the intention not to return. The maximum penalty for desertion in time of war is death. In time of peace it is dishonorable discharge and confinement at hard labor for not more than two and one-half years in the most aggravated cases. The Act of April 27, 1914, permits the suspension of that part of the sentence directing dishonorable discharge until the soldier's release from confinement. This affords the soldier an opportunity to earn restoration to the colors by good behavior while in confinement. In cases of soldiers earning restoration that part of the sentence directing dishonorable discharge will be remitted before it is executed and the soldier restored to duty to complete his enlistment. The United States government pays a reward of \$50 for the arrest, securing, and delivery of a deserter. This reward is payable to any civil officer or citizen who makes the arrest and is also payable when information and assistance is given which directly enables military authorities to make such arrest. A soldier who has deserted, and whose period of service has elapsed prior to his apprehension, is handed over to the military authorities for trial and sentence by a military court-martial, provided a period of two years, the extent of the period fixed by the Statute of Limitations, has not elapsed since the expiration of his enlistment.

In the British army desertion is a common offense, although in the majority of instances the soldier deserts to join another regiment immediately, in which case, should he confess or be discovered, he is tried by a district court-martial on the charge of fraudulent enlistment. Formerly the charge was "desertion and fraudulent

enlistment," and up to 1879 the rule was to brand a deserter by tattooing him with the letter D or B. C. (bad character). The punishment for a first offense is usually from three months' to two years' imprisonment in a military prison, and for succeeding offenses not more than five years may be inflicted. In Germany and continental Europe generally desertion in time of peace is difficult, and consequently infrequent, owing to the compulsory-service system which prevails. Desertion in time of war is treated by all countries alike, death being the usual punishment. Desertion from the naval services of European nations is also treated with varying terms of imprisonment, or the death penalty, according to the nature and circumstances of the offense.

In the United States navy absence without leave, with a manifest intention not to return, is always regarded as *desertion*. Absence without leave, with the probability that the person does not intend to desert, is at first regarded as *straggling*, and at the expiration of 10 days, if still absent, as *desertion*. In either case the commanding officer decides the point of intention and causes the person's name to be entered in the ship's log book and marked on the paymaster's books as a *deserter*. Commanding officers are authorized to offer a reward not exceeding \$20 for the recovery of a deserter, and one not exceeding \$10 for the recovery of a straggler. In addition to the reward there are paid such expenses attending their lodgment, subsistence, and traveling as have been fairly incurred. Any reward paid for the apprehension and necessary expenses of a straggler is charged to his account. The wages due a deserter are forfeited to the United States; if in debt to the government at the time of his desertion, his effects are sold and the proceeds applied to liquidate it. The letter R marked against a person's name on the ship's books signifies desertion, and no application for its removal is entertained unless the department is furnished with sufficient evidence that there was no intention to desert. Commanding officers of vessels at any United States naval station are not allowed to receive on board stragglers or deserters from other vessels, unless ordered so to do by the Bureau of Navigation, which has charge of the recruiting of the navy. In case of shipwreck or any other circumstance, except capture by an enemy, whereby any person belonging to a vessel in the navy becomes unavoidably separated from his command, it is his duty to proceed at once to the nearest ship, squadron, or station, and report himself to the officer in command. Should he not do so, he is regarded as a deserter, and no claim for wages is allowed unless he can prove that he was prevented by circumstances beyond his control. The punishment of death, or such other punishment as a court-martial may adjudge, can be inflicted on any person in the naval service who in time of war deserts or entices others to desert. In the merchant service absence without leave for 48 hours is regarded as conclusive evidence of desertion.

DESERTION. As applied to marital relations, the willful withdrawal of one of the married parties from the other, or the voluntary refusal of one to renew a suspended cohabitation without justification either in the nonconsent of the other party or the wrongful conduct of that party. In most of the States in this country willful desertion is made by law

a cause of divorce. The statutes of the several States define what may be considered desertion and usually declare the length of time after which desertion will be deemed a good cause for divorce. This time varies from one year to five. In some States it has been held that willful abandonment of his wife by a husband will justify an action for divorce, even though he had continued during the period of his desertion to support her. In England, under the law at present in force, the wife is entitled to a decree of judicial separation, coupled with an order for alimony, on account of willful desertion by the husband for two years without cause, while either spouse may for willful desertion of the other maintain an action against the offender for the restitution of conjugal rights. See CONJUGAL RIGHTS; DIVORCE; HUSBAND AND WIFE, and the authorities referred to under the last-named title.

The desertion of children or other dependent persons is dealt with under the head of ABANDONMENT.

DESERT VEGETATION. Plants whose natural habitats are in deserts. They form one of the three great climatic groups of xerophytes and show the typical xerophytic structures and organs which need but brief statement here. Most of the modifications secure reduced transpiration—e.g., many plants show reduced leaves—or the leaves may even be wholly absent, as in some cacti; the deciduous habit is pronounced and reaches its highest expression in annuals, where the whole plant, so to speak, is shed during the dry season; anatomical structures, such as thick cuticles, coats of hair and also wax, protected stomata, etc., are highly developed. Adaptations which secure increased absorption are often found—e.g., root systems are highly developed—and absorptive hairs sometimes occur. Possibly the most characteristic of all desert responses are storage organs; succulent leaves and stems are particularly common, and there are many plants with fleshy underground stems (bulbs, tubers, etc.). The conditions that determine the nature of the vegetation are largely associated with the small amount of atmospheric moisture and its seasonal distribution. Most deserts are in semitropical regions, and hence the xerophytic conditions are accelerated by intense heat and light. The loss of water by evaporation rather than by drainage often gives rise to alkaline soils, which still further intensify the xerophytic characters. See HALOPHYTES.

The vegetation of deserts is characterized by monotony rather than poverty, there being but few species that can endure the severe conditions. The plants are scattered so that the soil gives the landscape tone. In comparing desert plants with Alpine and Arctic plants, many ecological differences are seen; the most striking are the deciduous and succulent habits—habits particularly adapted to regions where drought is the result of heat. Floristically deserts are noted for their endemism (q.v.), agreeing in this with Alpine, but disagreeing with Arctic, vegetation. The endemism of deserts is due in part to their geographic isolation; mountains and other barriers commonly cut off deserts on all sides and prevent effective migration. However, another factor which favors endemism is the intense modification that desert plants have undergone as a result of the severe conditions. See XEROPHYTES.

DESÈZE, de-zâz', RAYMOND, COUNT (1748-

DESERT PLANTS



1. PRICKLY PEAR CACTUS (*Opuntia*), covering the surface of an Arizona desert.



2. ARTEMISIA AND CACTUS. Scene in an Arizona desert, showing the bushy greasewood and sage-brush (*Artemisia*), and the columnar giant cactus (*Cereus*).

1828). A French lawyer. He was born and educated in Bordeaux and in 1784 became established in Paris, where, together with Malesherbes and Trouchet, he was subsequently intrusted with the defense of Louis XVI before the National Convention. Owing to the splendid oratory which he displayed on that occasion, he fell under suspicion of sympathizing with the royal cause and was imprisoned until the fall of Robespierre. He did not avail himself of the opportunities of advancement offered him by Napoleon, but remained faithful to the house of Bourbon, and upon the installation of Louis XVIII was appointed president of the Court of Cassation and grand warden of the royal orders.

DESFONTAINES, dâ'fôn'tân', PIERRE FRANÇOIS GUYOT (1686-1745). A French writer, born in Rouen. He entered the Jesuit Order and became professor of rhetoric in Bourges, but soon resigned and was editor of the *Journal des Savants* (1724-27). He wrote *Observations sur les écrits modernes* (1735), a shallow performance, yet so stinging that Voltaire bitterly replied in a *Critique des observations* (1738). Desfontaines countered with *La Voltairomanie* (1738), and then *Le médiateur* (1739). His *Dictionnaire néologique* (6th ed., 1750), likewise aroused Voltaire's ire.

DESFONTAINES, RENÉ LOUISE (1750-1833). A French botanist, born in Tremblay. In 1783 he was elected a member of the Academy of Sciences, by which he was commissioned in the same year to explore the Barbary States. In 1786 he became director of the botanical gardens in Paris, which he greatly improved. His works comprise *Flora Atlantica* (1798-1800), compiled from his North Africa studies, and an *Histoire des arbres et arbrisseaux qui peuvent être cultivés en pleine terre sur le sol de la France* (1809).

DESFORGES, E. D. See PARNY, VICOMTE DE.

DESFOSSÉS, dâ'fô'sâ', ROMAIN JOSEPH (1798-1864). A French admiral, born at Gouesnon (Finistère). In 1830 he was appointed captain, in which capacity he participated in the capture of Algiers. He was also a member of the expedition against Mexico in 1838 and commanded a vessel at San Juan d'Ulloa. In 1844 he arranged a treaty of commerce with Muscat and later conducted a punitive expedition against Madagascar. He became rear admiral in 1848, Minister of Marine in 1849, vice admiral and member of the Admiralty Council in 1853, and chairman of the Council of Naval Construction in 1854. As commander of the Mediterranean fleet, he bombarded the forts at the entrance to the Tetuan River in 1859 during the conflict between Morocco and Spain. In the following year he was promoted to the rank of admiral.

DESGENETTES, dâ'zhe-nêt', NICOLAS RENÉ DUFRICHE (1762-1837). A French physician, born in Alençon. He was made physician in chief to the army in Italy in 1794 and occupied the same position in the Egyptian campaign. He went afterward to Spain and Russia with the French army and was present at Waterloo. His works include: *Analyse du système absorbant ou lymphatique* (1792); *Histoire médicale de l'armée de l'orient* (1802); *Souvenirs de la fin du XVIII. et du commencement du XIX. siècle* (1835-36).

DESGOFFE, dâ'gôf', BLAISE ALEXANDRE (1830-1901). A French painter of still life. He was born in Paris and studied there under

Flandrin and Bougereau. His specialty was still life and objects of art, as, e.g., vases and ivories from the collection in the Louvre, grouped together with, perhaps, fruit or flowers. Hamerton calls them "precious copies of precious things." In the Luxembourg there is the study of an "Amethyst Vase of the Sixteenth Century" (1859) by him, and in the Corcoran Gallery, in Washington, are his "Souvenirs of the Sixteenth and Seventeenth Centuries." He is also represented in the Metropolitan Museum, New York; the Walters Gallery, Baltimore; the Brooklyn Museum, and many private collections in America. He renders texture, material, metals, and jewels with peculiar felicity and microscopic detail, but is less successful with fruit.

DESHAYES, de-zâ', GÉRARD PAUL (1795-1875). A French geologist and conchologist. He was born at Boran (Oise), studied in Strassburg and Paris, gave private lectures on geology in Paris, and in 1869 was appointed professor of conchology at the Muséum d'Histoire Naturelle. From 1839 to 1842 he was a member of the scientific commission to Algeria. He was one of the founders of the Geological Society of France and frequently was elected its president. He assisted in the preparation of the statistical tables for Sir Charles Lyell's *Principles of Geology*, prepared the description of the recent and fossil mollusca obtained by the expedition to Morea, and began the compilation of a catalogue of the bivalve shells of the British Museum. It was as a student of fossil conchology that he was chiefly known. In this field he made important discoveries and wrote his most noteworthy work, the *Description des animaux sans vertèbres découverts dans le bassin de Paris* (1857-67), the result of more than 20 years of painstaking study. He also published a *Traité élémentaire de conchyliologie* (3 vols., 1834-58); *Mollusques de l'Algérie* (1848).

DESHIMA, dâ'eh'sh-mâ, or **DECIMA**, dâ'sh-mâ (Jap., Fore Island). A fan-shaped artificial islet connected by a single bridge with the city of Nagasaki (q.v.), Japan, on which the Dutch traders had their factory and residence from 1639 to 1859. Here the Dutch for 220 years enjoyed the European monopoly of trade with Japan, the recipients of honors as well as the subjects of rigid rule. In the renaissance of Japan Deshima played a most important part. Consult: Griffis, *Religions of Japan* (London, 1895); ib., *The Japanese Nation in Evolution* (New York, 1907); Rein, *Japan* (ib., 1884).

DESHNEFF, dësh-nyé'f. The present official name of East Cape, the most northeasterly point in Asia, named after the Russian explorer Deshneff, who in 1648 discovered the strait named by Bering in 1728.

DESHOULIÈRES, dâ'zôo'lyâr', ANTOINETTE DU LIGIER DE LA GARDE (1638-94). A French poet, born in Paris. She was married very young (1651) to the Seigneur Deshoulières, a gentleman attached to the Prince of Condé, and for eight years was separated from her husband, he following the Prince into Flanders, where she rejoined him in 1657 and soon afterward was imprisoned for a year because of her obnoxious efforts to collect her husband's pension that was long overdue. After 1672 she lived in Paris, holding a kind of salon and gathering about her the poets, philosophers, and wits of the day. She was the head of the cabal against Racine's *Phèdre* (1677) and composed a cruel epigram

on the subject. Boileau, who never forgave her, has described her in his tenth satire. Her plays are weak, and her reputation rests upon several poems she wrote in the *Mercurie Galant* under the name of "Amaryllis" and was known by her flatterers as the "Tenth Muse." The best edition of her works was published in 1749.

DESHT. See DASHT.

DESICCANTS (for etymology, see DESICCATION). In medicine, the substances with astringent properties which are serviceable in checking secretion from a mucous membrane or causing scabbing over or cicatrization of an ulcer or wound.

DESICCATION (Lat. *de*, down from, away + *sicare*, to dry). The process of drying by the employment of heat, dry air, or chemical agents which have an affinity for water. Examples of the class of desiccants, or drying substances, are fused chloride of calcium, quicklime, caustic potash, fused carbonate of potash, sulphuric acid, and phosphorous pentoxide. Organic liquids are usually dried (i.e., freed of water) by introducing an appropriate desiccant into them: thus, alcohol is rendered absolute by allowing it to stand in contact with quicklime; benzene may be dried by letting it stand in contact with fused calcium chloride; etc. Solids, on the other hand, are dried, or kept dry, by leaving them within a desiccator or bell jar, in which the desiccant is contained in a separate vessel. A desiccator works most efficiently if a vacuum is established within it and if its desiccant is placed *above* the vessel containing the substance to be dried. See also FOOD, PRESERVATION OF.

DESIDERIO DA SETTIGNANO, dā'sé-dā'rē-ō dā sēt'té-nyā'nō (1428-64). One of the foremost Florentine sculptors of the early Renaissance. He was born at Settignano, near Florence, of a family of stonemasons, the son of Bartolommeo di Francesco. He is traditionally supposed to have been a pupil of Donatello, whose influence appears in the naive naturalism and the marble technique of his early works; but as the latter left Florence to remain 10 years in Padua in 1443 when his supposed pupil was only 15 years old, this influence must have been chiefly by example. Reminiscences of Luca della Robbia also occur in his earliest reliefs of the Madonna. Concerning his life only meagre details gleaned from public documents are known. He was received into the stonemasons' guild in 1453; in 1457 he lived near San Pietro Maggiore, Florence, and had a workshop with his elder brother near Ponte Trinità; took part in a competition for Siena in 1461, and died at Florence, Jan. 16, 1464. His masterpiece, the marble tomb of Carlo Marsuppini (church of Santa Croce), executed in 1455 or soon after, is probably the most beautiful Florentine grave monument of the fifteenth century. Within a frame surrounded by ornate carving of the most exquisite detail and elaborate invention the effigy of the dead man reclines upon his sarcophagus. A relief of the Madonna with two adoring angels is in the pediment, above which are the statues of two boys holding a garland, while below are two others with shields. Among his other works of large proportions was the celebrated ciborium of San Pietro Maggiore, unfortunately lost in 1784; others are the tabernacle of San Lorenzo, a magnificent marble chimney piece in South Kensington Museum, and a wooden statue of the

Magdalen in Santa Trinità. His works on a smaller scale include the delightful cherub frieze of the Pazzi Chapel, the relief of St. John in the Museo Nazionale, Florence, and a tondo of Christ and St. John the Baptist (Aronati collection, Paris)—all youthful works formerly ascribed to Donatello. Among his characteristic representations of the Madonna are the early reliefs in the Foulé collection, Paris, those in the Panchiattei Palace, Florence, and the Pinacoteca, Turin, and the terra-cotta statuette in South Kensington Museum. He carved also a number of naive and characteristic busts of children, such as the well-known "Laughing Child" of the Benda collection, Vienna; the same subject in the Dreyfuss collection, Paris; busts of boys in the Bibliothèque Nationale, Paris, the Dreyfuss collection, and in that of Sir Charles Robinson, London, and the fine "Head of a Youth" in the Museo Nazionale, Florence. Among his charming busts of young women are the well-known example in the Museo Nazionale, Florence, two others in the Berlin and the J. P. Morgan collections (Metropolitan Museum, New York) representing Marietta Strozzi; a sandstone bust and a painted plaster replica of a young woman thought to be a princess of Urbino, in the Berlin Museum. His other works include the spirited coat of arms with a lion rampant of the Gianfigliuzzi Palace, Florence; a relief supposedly of St. Cecilia in the collection of Lord Wemyss (London), usually attributed to Donatello; and a portrait of a supposed courtesan, South Kensington Museum.

Desiderio may be termed the leader of the charming group of marble sculptors who flourished in the generation following Donatello; he is the founder of their style, characterized by naive sincerity, refinement of treatment, and a certain meagreness of outline. In his decorative work he refined the architectural forms of the early Renaissance, invented many new motifs, and added greatly to the richness of detail. His sculpture is characterized by a masterly psychological interpretation, and his ideal types of the Madonna and child as well as young girls dominated sculpture for the rest of the century. Consult Bode, *Florentiner Bildhauer der Renaissance* (Berlin; Eng. trans., 1902), and *Die italienische Plastik* (ib., 1911). Nearly all of his works are reproduced in the monumental publication, Bode, *Denkmäler der Renaissance-Skulptur Toscanas*, plates 282-312 (Munich, 1892-1905).

DESIDERIUS. The last King (756-774 A.D.) of the Lombards (q.v.). After the death of Aistulf there was a contest for the kingdom, and Desiderius obtained it largely through the influence of the Pope, to whom he promised to return part of the Lombard conquests. After obtaining the kingdom, however, he only partially fulfilled his promise. For 14 years he was able to keep his territory almost intact. Through the marriage of his daughter, in 770, to Charles the Great, he seemed secure from any Frankish intervention; but after a year Charles repudiated his wife, and a little later Gerberga, the widow of Karlomann, fled to Desiderius with her children for protection against Charles. Desiderius hoped to have the children of Karlomann recognized as the lawful heirs to the Frankish Monarchy, and tried by an attack on the papal territory to force the Pope to anoint them. The Pope appealed to Charles, who in

773 crossed the Alps and in the following year succeeded in capturing Desiderius and conquering his kingdom. Desiderius was held as a prisoner in a monastery until his death. Consult: Hartmann, *Geschichte Italiens im Mittelalter*, vol. ii (Gotha, 1903); Hodgkin, *Italy and her Invaders*, vol. vii (Oxford, 1899); Abel-Simson, *Jahrbücher des frankischen Reiches unter Karl dem Grossen*, vol. i (Leipzig, 1888).

DESIGN' (OF, *dessein*, from Lat. *de*, out + *signare*, to mark). In the fine arts, the art of originating and combining elements of form or color to produce a unified composition. It requires in the designer a grasp of all the exigencies, both practical and aesthetic, of the problem he is to solve, combined with the necessary imagination to devise a scheme that shall satisfy these exigencies and at the same time form a beautiful and unified whole. A knowledge of art history is an advantage, though truly great design should be creative and scholarly, but not archaeological.

The solution of an artistic problem is also known as a design in a critical sense—as a good or bad design or as a design exhibiting certain qualities—but not otherwise. By an extension of this meaning the word "design" is loosely applied to those drawings, paintings, or models by which the artist expresses the conception he has originated; for these modes of expression are so closely bound up with the art they express as to be in the lay mind inseparable from them.

The word "design" is also used in analogous senses in the industrial arts, as in "textile design," "furniture design," etc.; and more loosely it is applied to any creative composition of many elements, even where the idea of beauty is totally lacking, as in "machine design," "aeroplane design," "bridge design," and analogous terms.

DESIGN, SCHOOLS OF. In ancient times every master of an art or artistic industry was accustomed to impart the secrets of his craft to a number of pupils, who in return gave him such help as they could, working upon his masterpieces and learning by practice, under his supervision, his particular methods as well as the established traditions of the craft. In the Middle Ages this system of teaching was highly developed by the guilds, which controlled all the arts and trades, particularly in Florence and north Italy, in Germany and Flanders, and to a considerable extent also in France and England. The governing councils of these guilds regulated the terms of apprenticeship and the course of instruction, prescribed the tests for promotion from one grade to another, and instituted prize competitions to stimulate proficiency.

The Italian Renaissance, however, brought about a return from corporate to individual teaching. The guilds lost their controlling influence because of the personal preëminence of great artists like Perugino, Raphael, Da Vinci, and Michelangelo. These attracted groups of apprentice artists, who became their ardent disciples and imitators, reproducing often for a while not only the general style, but even the tricks and mannerisms of their masters. The term "schools" applied to these personal or local coteries and groups (school of Raphael, Venetian school) does not designate organized institutions at all.

The teaching of design by systematic instruction in organized schools is a comparatively

modern idea. In the medieval guilds, though the instruction was systematic in a measure, it was not given in schools or classes by specially appointed teachers. The first school of design to embody the new conception was the Royal Academy of Fine Arts, founded in 1648, in the reign of Louis XIV, in Paris. In this famous school, which has been in continuous operation ever since, five departments were established—those of painting, sculpture, architecture, engraving, and the cutting of gems and metals—in which instruction was given by regularly appointed professors, and proficiency encouraged by an elaborate system of awards, culminating in the Grand Prize of Rome in each department. See *ECOLE DES BEAUX-ARTS; PRIX DE ROME*.

In this school, to which France owes the training of many of her most illustrious artists, the first step was taken towards a scientific system of teaching design by analyzing the training required into its essential elements and teaching these separately by lectures and class work, with test examinations. Composition and the theory of design, the history of art, perspective, costume, and classical archaeology, and in architecture the orders and the elements of constructive science, are the chief divisions of this teaching. The actual studio work has, however, from the first been conducted largely on the traditional lines of the apprenticeship system; and this is true of most of the schools of design, both European and American. A few have, on the other hand, endeavored to carry the scientific organization of the instruction into their studio work, as in the teaching of decorative design in the South Kensington Schools (see *SOUTH KENSINGTON, NATIONAL ART SCHOOLS OF*) and like institutions in England, and in the American schools of architecture.

Since the middle of the nineteenth century the number of schools of design has greatly increased in Europe, and in the United States since 1876; in both cases this has been largely due to the stimulus of international exhibitions. Those of 1851 and 1862 in London, and in 1855 in Paris, opened the eyes of the English to the superiority of the French art industries and led to the establishment of the South Kensington Museum and Schools of Art and of scores of provincial schools for the training of skilled designers of textiles, ceramic wares, and other products of industry. Stimulated by the success of the British experiment, the various German states, the French government, and many municipalities in both these countries opened schools of design in the chief industrial centres. The marked feature of this movement, following the British precedent, was the recognition of the educational value of museums of industrial art.

In the United States the schools of design are, with but few exceptions, independent of municipal or State control, being managed by incorporated boards of trustees or influential art societies. Some of the museums of art are maintained or aided by the city or state; but in general both schools and museums have been founded by private munificence and are maintained without governmental aid. Besides the teaching in these special schools, drawing and elementary design are also taught in many public schools of Europe and America, as well as in evening classes conducted by the municipality or by philanthropic societies in the United States.

A broad distinction is generally made between schools of the fine arts, in which painting,

sculpture, and architecture are taught—sometimes also music and engraving—and schools of industrial art, which train their pupils for industrial design and the decorative arts. (See DECORATIVE ART.) In some cases the two kinds of training are offered in the same school, but this is rare. Architectural training, moreover, has in the United States been chiefly given in schools attached to universities or to technological institutions, and has been more thoroughly developed than any other branch of education in design in such schools as that of the Massachusetts Institute of Technology (1866), Cornell University (1889), Columbia University (1881), the University of Pennsylvania, and Harvard University.

In the modern schools of design free-hand drawing is universally recognized as the foundation upon which all the training must be based, since it involves the coordination of hand and eye. The grammar of design—i.e., the theoretic principles of good decoration and the rules which express these—is taught by lectures or textbooks and enforced by progressive exercises in design. Fertility and resource are cultivated by the study of the history of the decorative arts and of the examples of design in the museums, and the taste is trained both by this study and by the criticism of original designs prepared by the students. Finally, there is added to these branches the detailed technical instruction necessary for each particular industry, such as stained-glass work, carpet weaving, wall-paper making, pottery, and glasswork; and the graduate pupil is then qualified to enter the service of some industrial establishment or to make designs for sale to the manufacturers.

A number of the most important schools of design are treated in special articles, such as: ART STUDENTS' LEAGUE; BOSTON ART SCHOOL; ÉCOLE DES BEAUX-ARTS; NATIONAL ACADEMY OF DESIGN; ROYAL ACADEMY, LONDON; SOUTH KENSINGTON, NATIONAL ART SCHOOLS OF; SAINT LUKE, ACADEMY OF. Other important schools of design are: the École Nationale et Spéciale des Arts Décoratifs in Paris, the Berlin Bau-Akademie, the Vienna Imperial Art Institute, the School of Applied Design for Women, the Cooper Union (q.v.), New York, the Chicago Art Institute, and the textile schools of Lowell and Philadelphia. Consult: Münsterberg, *The Principles of Art Education* (New York, 1904); Ludwig, *Ueber Erziehung zur Kunstübung und zum Kunstgenuss* (Straussburg, 1907); Kunzfeld, *Unter den gegenwärtigen Stand der Kunsterziehungsfrage* (Langensalza, 1909); Adams, *Theory and Practice in Designing* (New York, 1911).

DÉSIRADE, dâ'zê'râd' (Sp. *deseada*, desired). A small island of the French West Indies, situated about 8 miles northeast of Guadeloupe, of which it is a dependency (Map: West Indies, G 3). It is about 7 miles long and 1½ miles broad and contains about 10 square miles; it is without a good harbor. Its population (1906) was 1484, chiefly emancipated slaves. The island was the first discovery of Columbus on his second voyage in 1493. He named it Deseada. It has been in the possession of the French since 1814. Pop., about 1500.

DESIRE' (OF. *desir*, Fr. *désir*, It. *desiro*, *desiderio*, from Lat. *desiderum*, desire, from *desiderare*, to desire). An imperfect volition. In both desire and volition an "attractive" object or "end" is set before consciousness; but in de-

sire the individual is unable to attain the "end," unable even to attempt to attain it, while in volition he makes an effort to possess the object. He can hardly say that he is "baffled" in desire, for that would imply the making of an attempt; and although the object appears as desirable, it does not appear as a thing to be sought after—at least, not for the moment. The inhibition is an integral part of the situation in which the desired object is presented. The central process in desire is, then, a motive shorn of its power. One may desire an object which has fallen out of reach; but since it is out of reach, one does not "will" to get it. Only when the means of attainment come before the mind, or, at least, when the impossibility of reaching the object escapes the mind, does the volition arise; only then, i.e., does one actually endeavor, strive to obtain the object. Until experience teaches that some things are impossible of attainment, the distinction between desire and volition does not arise. Thus, the infant desires the moon and at the same time stretches forth his hands to grasp it. He may still desire it after he has learned that it is an object in the sky, but he does not "will" to possess it.

Some psychologists have given the word "desire" a wider meaning than that just explained. They leave out the element of inhibition or inability and assert that whenever an idea presents itself as a motive it arouses desire, whether the thing desired, e.g., a dinner or an ideal in moral conduct, is or is not realized. Under the first definition desire is akin to wishing; under the second it is a particular kind of conation (q.v.), an appetite, or an "endeavor towards." It is probably better to restrict the term to its narrower meaning and to retain the element of inhibition, the lack of means by which the desire-consciousness might be changed into the volition-consciousness. Thus considered, a dissection of desire reveals a strong affective element, which may consist in pleasantness or unpleasantness. The thought of restriction is inherently unpleasant, but the unpleasantness may be overcome by the agreeable thought of the object. Over and above the affection and the ideas attended to, there is in desire a complex of organic sensations, and, in case the desire is sufficiently powerful—as in longing or yearning—a well-marked feeling of effort (q.v.). Consult: Bain, *Mental and Moral Science* (London, 1884); Wundt, *Human and Animal Psychology* (ib., 1901); Stout, *Manual of Psychology* (ib., 1899). See EMOTION; WILL.

DESJARDINS, dâ'zhê'r'dân', ALPHONSE (1841-1912). A Canadian journalist and statesman. He was born at Terrebonne, P. Q., was educated at Masson College and Nicolet Seminary, and was admitted to the bar in 1862. For some years he practiced law, but in 1868 he abandoned it for journalism and served on the editorial staff of *L'Ordre* and as chief editor of *Le Nouveau Monde*. He took an active part in organizing the Canadian Papal Zouaves, sent to aid the Pope in 1868, and was one of the framers of the *Programme Catholique* (1871). For his services to the Roman Catholic church he was created a knight of the Order of Pius IX in 1872. In 1874 he was elected a Conservative member of the Dominion Parliament and retained his seat until 1892. He was mayor of Montreal (1893), Minister of Militia in Sir Mackenzie Bowell's administration in 1896, and in the same year was Minister of Public Works

in the administration of Sir Charles Tupper. Towards the end of 1896 he retired from political life.

DESJARDINS, MARTIN (1640-94). A French sculptor, whose real name was Martin van den Bogaert. He was born at Breda, in Holland, and studied under Verbruggen in Antwerp and later under Buiette in Paris, where he succeeded so well that he took up his residence there. He was made an academicien in 1671, then professor (1681), rector of the Royal Academy (1686), and court sculptor to Louis XIV. His works are in several of the Paris churches, and at the Invalides and Versailles. His masterpiece was the colossal bronze statue of Louis XIV in the Place de la Victoire (1686), but this was destroyed in 1792, and there are only fragments of it left in the Louvre. It represented the King on foot, crowned by Victory. There are colossal statues of Louis XIV at Versailles and Lyons by Desjardins, and a fine bust of the painter Mignard, a bust of Edouard Colbert, and a statue of Hercules in the Louvre. His work is academic in finish, but has not much dramatic feeling.

DESJARDINS, MICHEL ALBERT (1838-97). A French writer and politician, born at Beauvais (Oise). He studied at the University of Paris and in 1871 was elected deputy for Oise in the National Assembly. From 1873 to 1875 he was Undersecretary in the Ministry of Public Instruction and in 1875-76 held the same post in the Ministry of the Interior. In 1877 he was appointed to the chair of legislation and criminal procedure in the University of Paris. He published *Le pouvoir civil au concile de Trente* (1869); *Traité du vol dans les principales législations de l'antiquité et spécialement dans le droit romain* (1881); *Code pénal russe* (1884); *Examen doctrinal: le droit criminel en Algérie et dans les colonies* (1887).

DES'MAN (Sw. *desman* *råtta*, *desman*, from *desman*, *musk* + *råtta*, Ger. *Ratte*, rat). A large, aquatic, shrewlike mole of the genus *Myogale*, or *Galemys*, and family Talpidae, of which two species are known. They have completely webbed feet, the fore pair not adapted to digging and the hind pair enlarged into paddles, and a long and flexible proboscis. The best-known species is the Russian *desman* (*Myogale* [or *Galemys*] *moschata*), which inhabits the margins of streams and lakes throughout south-eastern Russia. It is about 16 inches long, including the tail, which is long and laterally compressed, forming a powerful swimming organ, acting as a sculling oar; and it is clothed in soft, molelike fur, blackish above and whitish beneath, and salable to furriers. An element of value in its fur is said to be the musky odor which clings to the fur, which is derived from a cluster of sebaceous anal glands and which renders the flesh uneatable. Its home is an extensive burrow in the bank of a stream, opening underneath the water, in which the *desman* spends most of its time, and where it searches, by means of its long, flexible, and sensitive nose, for insects, leeches, small mollusks, and similar food in the mud and beneath the stones. The other species (*Myogale pyrenaica*, or *Galemys pyrenaicus*) inhabits the Pyrenees, is far smaller, and has a perfectly round tail, but its habits are much the same. Fossils show that the *desman* inhabited Europe until the last Glacial era.

DESMARETS DE SAINT-SORLIN, dâ'-

mâ'-rà' de sâ'n sôr'lân', JEAN (1595-1676). A French dramatic and historical writer. He attracted the attention of Richelieu and through his influence became one of the founders, and the first chancellor, of the Académie Française (1634-38). Richelieu appointed him counselor to the King and Secretary General of the Levant marine. In 1645 Desmarets became a devout Catholic. This led him to attack the Jansenists of Port Royal, and the pen war lasted three years. The most interesting of his works is *De la comparaison de la langue et de la poésie française avec la grecque et la latine* (1670), which opened the long quarrel between the ancients and the moderns. His works also include *Les visionnaires* (1637), *Erigone* (1638), *Scipion* (1639). Consult H. Rigault, *Histoire de la querelle des anciens et des modernes* (1850).

DESMARRES, dâ'mâr', LOUIS AUGUSTE (1810-82). A French oculist, born at Evreux. In Paris, in 1839, he established the *clinique* which he conducted for 25 years. He introduced the operation of iridectomy. He also invented an ophthalmoscope and contributed to the *Gazette des Hôpitaux*. His principal publication is a *Traité théorique et pratique des maladies des yeux* (1854-58).

DE SMET DE NAEYER, PAUL, COMTE. See SMET DE NAEYER.

DESMIDS. One-celled alga that exhibit the greatest possible variety of form and are often extremely beautiful. The cell is peculiar in being organized into two symmetrical halves, often separated by a deep constriction which makes the "isthmus." In each half there is a large chloroplast, while in the isthmus connecting the two halves the single nucleus is placed. Many of the desmids have the power of locomotion, and they are very sensitive to light, taking a position determined by the incident rays. On account of the structure of the cell its division is peculiar. The nucleus divides, and a wall is formed across the isthmus. The division thus results in two new cells, each consisting of half of the old cell and a portion of the isthmus, which enlarges into a new half. In sexual reproduction the cells pair, the walls are ruptured at the isthmus, the protoplasts escape and fuse, and a fertilized egg (zygospore) is formed.

DES MOINES, de moîn' (Fr., of the monks). The capital and the largest city of Iowa, and the county seat of Polk County, near the geographical centre of the State, 138 miles east by north of Omaha, Neb., at the confluence of the Raccoon and the Des Moines rivers (Map: Iowa, D 3). It is an important manufacturing and commercial city and is noted for its extensive insurance interests and its exceptional railroad facilities, which include the lines of the Chicago, Rock Island, and Pacific, the Chicago, Burlington, and Quincy, the Chicago Great Western, the Chicago and Northwestern, the Wabash, the Minneapolis and St. Louis, the Fort Dodge, Des Moines, and Southern, and the Chicago, Milwaukee, and St. Paul, and also several interurban lines. Des Moines was settled in 1846, was incorporated as the town of Fort Des Moines in 1851, and in 1857 was chartered as a city and became the capital of the State, replacing Iowa City. It is built on gently sloping hills and contains, among its finest structures, the capitol, erected at a cost of \$3,000,000, the United States Government building, the State Historical building, city library, the county courthouse, two hospitals, a large auditorium, and

three public high schools. Des Moines is the seat of Des Moines College (Baptist), established in 1865; Drake University, founded in 1881 by the Disciples of Christ, but now non-sectarian; Highland Park College (Presbyterian), founded in 1890; Grand View College (Danish Lutheran), founded in 1895; and the Capital City Commercial College, founded in 1884. It has also an extensive system of parks and several bridges across the two rivers. The Iowa State Fair is held here annually. Des Moines and the surrounding region are underlaid with vast deposits of bituminous coal, a material advantage which has contributed to the city's rapid industrial growth. Among its manufactures are books and magazines, patent medicines, brick, trunks, carriages, wagons, sleighs, engines and boilers, cotton and woolen goods, pottery, Portland cement, glue, incubators, clothing, tile, sewer pipe, agricultural implements, confectionery, crackers, mattresses, harness, scales, furnaces, plows, soap, brooms, white bronze, gloves, twine, tents, linseed oil, wall paper, washing machines, furniture, axle grease, baking powder, electrical appliances, etc. The annual income and expenditures of the city amount to about \$2,200,000 and \$2,600,000 respectively, the principal items in the budget being \$75,000 for street lighting, \$80,000 for the fire department, and \$965,000 for schools. A city charter, embodying what has become known as the "Des Moines Plan" of municipal government, was adopted in 1907. It vests the government in a commission of five, chosen biennially, on a nonpartisan ticket, by the electors of the entire city, district divisions having been abolished. Other city officers are chosen by the commission, and city employees are selected by a civil-service board of three members appointed by the commission. Each of the administrative departments is controlled by a commission. The commissioners are subject to the recall on petition of 25 per cent of the registered number of voters. All franchises must be submitted to the people, and they can compel the commission to pass any law or ordinance. Fort Des Moines was established here in 1843 to protect the rights of the Sacs and the Foxes. Whites settled in 1851, and in 1900 the fort, with a full regiment of cavalry, was reestablished. Pop., 1890, 50,093; 1900, 62,139; 1910, 86,368; 1914 (U. S. est.), 96,691.

DES MOINES COLLEGE. An institution of higher education, situated at Des Moines, Iowa. It was established in 1865 by members of the Baptist church and was affiliated with Chicago University (see CHICAGO, UNIVERSITY OF) in 1892. The college offers the bachelor's degree in arts, science, and philosophy. It had in 1914 an enrollment of 507, including students in the musical and preparatory departments. The library contains 10,000 volumes. A special department for the training of teachers is maintained. Six college buildings stand on a wooded campus of 10 acres, including the athletic field. Buildings and grounds are valued at \$250,000. The endowment is \$200,000. The president in 1914 was John A. Earl, D.D.

DES MOINES RIVER. The most important river of Iowa. It is formed by the meeting of the east and west forks of the Des Moines in Humboldt Co., Iowa. The east fork is the outlet of Okamnapadu Lake, in Emmet Co., Iowa; the west fork flows from a chain of lakes, one of which is Lake Heron, in Jackson Co., Minn.

(Map: Iowa, D 3). The Des Moines flows southeasterly across Iowa and empties into the Mississippi River (q.v.) 3 miles below Keokuk. It is 550 miles long and drains an area of 14,500 square miles. From Farmington to its mouth it falls 48 feet, or 1½ feet per mile. The chief tributary is the Coon River, which joins it from the west at Des Moines. The chief cities along its banks are Ottumwa, Des Moines, and Fort Dodge. Through Lee County it flows in a narrow, gorge-like valley noted for its picturesque scenery.

DESMOSPONGLE. See HEXACTINELLIDA.

DESMOULINS, dā'mōō'lān', LUCIE SIMPLICE CAMILLE BENOIT (1760-94). A French politician and journalist of the time of the Revolution. He was born at Guise, in Picardy, March 2, 1760, the eldest son of the lieutenant general of the Bailiwick of Guise. Through the influence of a relative young Desmoulin obtained a scholarship in the Lycée Louis-le-Grand, Paris, where he had Robespierre as a fellow student. After his graduation young Desmoulin studied law and became an advocate before the Parlement of Paris in 1785, but met with little success, owing, it is said, to a stammer in his speech. In 1788 he published a philosophical work, *La philosophie du peuple français*; but it was the dismissal of Necker, July 11, 1789, that first brought Desmoulin to the front as a Revolutionist. He heard the news on the evening of July 12 and, in the excitement of the moment forgetting his stammer, sprang on a café table in the garden of the Palais Royal and harangued the crowd of people around him. This scene marked the actual beginning of the Revolution. The cry "To arms!" resounded, and two days later the Bastille was taken. A Republican pamphlet, *La France libre*, which he brought out, was received with instantaneous favor, and he was encouraged to follow it up with a journal of a revolutionary nature. His *Discours de la lanterne aux Parisiens* was less to his credit and earned for him the nickname of "Procureur de la lanterne." Desmoulin was a hero worshiper, but inconsistent in his allegiance, and, after making Mirabeau his idol, transferred his affections to Danton, to whom he clung until the end. In 1791 both men were in danger of arrest for the extreme boldness of their views, but both escaped. It was at this time that Desmoulin ceased publishing *Les Révolutions de France et de Brabant*, his first journal, and began *La Tribune des Patriotes*, which became the organ of the Cordeliers. He was also intimate with Robespierre, who persuaded him to attack the Girondists in a work entitled *Fragment de l'histoire de la Révolution* (usually referred to as the *Histoire des Brissotins*). This venomous attack helped greatly in overthrowing the opposite party, but it is said that later Desmoulin regretted his course. With Danton he began to call for moderation, and towards the end of 1793 the first number of *Le Vieux Cordelier* appeared and stood up for just and legal trials and less severe sentences. Desmoulin attacked the Hébertists as well as the Committee of Public Safety, and the breach between the Dantonists and ultra-Jacobins grew wider. After being twice accused before the Jacobin Club, where he was defended by Robespierre, Desmoulin was at length arrested, along with Danton and others of the party. The merest formality of a trial took place, and they were all executed, April 5, 1794. Desmoulin

did not face death with the unflinching courage of Danton. His beautiful young wife, Lucile Duplessis, sought in every way to rescue him, but was herself arrested and guillotined a fortnight later. Consult: *Œuvres de Camille Desmoulins, avec une notice biographique*, ed. by Matton (Paris, 1838); Claretie, *Camille Desmoulins, Lucie Desmoulins, étude sur les Dantonistes* (ib., 1875); Eng. trans., *Camille Desmoulins and his Wife*, by Mrs. Cashel Hoey (London, 1876); Aulard, *Les orateurs de la Législature et de la Convention* (Paris, 1885-86); Lenotre, *Paris révolutionnaire* (ib., 1904).

DESDNA, dā'snā. A river of Russia, rising in the Government of Smolensk, 72 miles southeast of the town of that name (Map: Russia, D 4). It flows southeast through the Government of Smolensk until it reaches Bryansk, in Orel, where it makes a sharp bend and, after a south-westerly course through the governments of Orel and Tchernigov, joins the Dnieper nearly opposite Kiev. The Desna is 690 miles in length and is navigable for steamers as far as Bryansk. Many important towns are found in its basin. The river thus acquires considerable importance in the inland trade of Russia.

DESNOIRESTERRES, dā'nwā'tār, GUSTAVE LE BRISQYS (1817-92). A French author, born at Bayeux. He is the author of a number of poems and novels, but his principal works have been historical studies of the eighteenth century. These include: *Voltaire et la société française au XVIIIème siècle* (8 vols., 1867-76), which was crowned by the Academy; *Les cours galantes* (1859-64); *La comédie satirique au XVIIIème siècle* (1884); *Le chevalier Dorat et les poètes légers du XVIIIème siècle* (1887).

DESNOYERS, dā'nwā'yā, AUGUSTE GASPARD LOUIS BOUCHER, BARON (1779-1857). A French engraver, born in Paris. He studied drawing with Lethieres, the dotted manner of engraving with Louis Darciis, and line engraving later under Tardieu. One of the most important engravers of his time, he became a member of the Institute in 1816, in 1825 was made engraver to the King, and three years later received the title of Baron. He is especially known for his engravings after Raphael, whose works he interpreted with peculiar sympathy and masterly technique. Among the best of his plates are Raphael's "La belle jardinière" (1801), Gérard's portrait of Napoleon (1808), the "Madonna della Casa d'Alba" (1827), the "Sistine Madonna" (1846), and especially "The Transfiguration" (1840). In 1821 he published a collection of 34 prints, entitled *Recueil d'estampes gravées d'après des peintures antiques italiennes*. His complete œuvre comprises 75 plates.

DESNOYERS, LOUIS CLAUDE JOSEPH FLORENCE (1805-68). A French author, born at Replonges (Ain). He contributed largely to the success of the *Journal des Enfants*, in which his *Mésaventures de Jean Paul Choppart* (1836, 1909) was published. This and the following story, *Aventures de Robert-Robert et de son ami Toussaint-Lavenette* (1840), are considered to be among the classics of the literature of education.

DESOLATION ISLAND. See KERQUELEN LAND.

DESOLATION LAND, also called **DESOLATION ISLAND**. An island of Chile, on the south side of the west end of the Strait of Magellan. It is 70 miles long and 15 miles broad. Its westernmost point is Cape Pillar.

DE SOLA, dā sō'lā, MELDOLA (1853-). A Canadian Jewish rabbi and opponent of reformed Judaism. He was born in Montreal and was educated under the direction of his father, A. de Sola, also a Jewish rabbi. For a few years he was engaged in commercial pursuits, but after an experience in 1876-82 as voluntary lay assistant in the Spanish and Portuguese synagogue of which his father was rabbi, he succeeded the latter in 1882. His controlling aim was soon known to be uncompromising opposition to the Liberal movement in North American Judaism. He preached and worked against it vigorously. He was foremost in promoting, and was first vice president of, a conference of the representatives of orthodox Judaism (New York, 1898), and he was also one of the three rabbis who formulated the principles governing the convention. A result of the conference was the formation of the Union of Orthodox Jewish Congregations of the United States and Canada. He became a firm supporter of the Zionist movement (q.v.).

DESOR, dē-zōr', EDOUARD (1811-82). A Swiss geologist, born at Friedrichsdorf, near Homburg. He studied at the universities of Giessen and Heidelberg and in consequence of the part taken by him in political affairs was compelled to escape to Paris. Thence he went to Neuchâtel, where he became acquainted with Agassiz, whom in 1847 he accompanied to America. He subsequently became professor of geology in the Académie of Neuchâtel. He was elected a member of the Federal Grand Council and in 1873 became its president. His publications, dealing chiefly with the geology of Switzerland, include: *Gebirgsbau der Alpen* (1865); *Les palafittes du lac de Neuchâtel* (1865); *Echinologie helvétique* (1869-72); *Le paysage morainique* (1875).

DE SOTO. A city in Jefferson Co., Mo., 43 miles south by west of St. Louis, on the St. Louis, Iron Mountain, and Southern Railroad (Map: Missouri, F 3). It is in the centre of a lead and zinc mining region, exports grain, flour, produce, and live stock, and has a shoe factory, flouring and planing mills and railroad machine shops. The water works are owned by the city. Pop., 1900, 5611; 1910, 4721.

DE SOTO, HERNANDO (or FERNANDO). See SOTO, HERNANDO (or FERNANDO) DE.

DESPAIRE, GIANT. The monstrous owner of "Doubting Castle," where Christian and Hopeful are temporarily imprisoned, in Bunyan's *Pilgrim's Progress*.

DESPARD, dēs'pārd, EDWARD MARCUS (1751-1803). An Irish conspirator, born in Queen's County. He entered the army as ensign in 1766 and in 1779 was appointed engineer in the San Juan expedition, in which he distinguished himself. In 1781 he became commander of the island of Rattan, with the rank of captain, and subsequently of the Bay of Honduras and the entire Mosquito Coast. Soon after the peninsula of Yucatan had been added to his domains by Spanish grant, he was accused of cruelty and other offenses by the prior English settlers, who resented the concessions made to logwood cutters from the Mosquito Coast. He was ordered to England, where he remained from 1790 to 1792, only to learn that there was no charge against him. An unjustifiable imprisonment from 1798 to 1800 so incensed him against the government that he devised a plot for the assassination of the King and the capture of

the Bank of England and the Tower. He was convicted of treason and executed at Newington.

DESPENSER, də-spən'sēr. A powerful English family of the thirteenth and fourteenth centuries.—**HUGH LE DESPENSER** (died 1265) was justiciar of England between 1260 and 1264 and was associated with Simon de Montfort in the rising against Henry III. He was killed at the battle of Evesham.—His son, **HUGH LE DESPENSER THE ELDER** (1262-1326), played a very prominent part in the reign of Edward II. He served in the Welsh Wars and in France and Scotland, being present at the battle of Dunbar in 1296. Subsequently he was employed on numerous diplomatic missions to various European Powers and to the Pope. Up to the year 1308 he was a member of the Barons' party, in which his property and rank assured him a high position, but about the time of the fall of Gaveston (q.v.), the King's favorite, he abandoned the cause of the Barons, and became the head of the Court party, and a bitter enemy of Thomas, Earl of Lancaster. Though undoubtedly avaricious and unscrupulous in the means he adopted for increasing his possessions, Hugh was probably no more selfish than most of the great nobles of his time, who took advantage of the presence of a weak king on the throne to further their own interests. In 1321 the Barons' party gained the upper hand, and Hugh was sentenced by Parliament to banishment. He was recalled, however, in the following year, when the King's faction was once more in the ascendant, and contributed no doubt to the fall and death of the Earl of Lancaster. In the same year he was made Earl of Winchester, and his position became more influential than ever. The feeling of hatred with which he was regarded by all the great nobles finally led to the outbreak of a rebellion, in which Isabella, the wife of Edward II, joined. The Queen's forces marched upon Bristol, which was defended by Hugh le Despenser. The King's favorite was forced to surrender and was speedily hanged.—**HUGH LE DESPENSER THE YOUNGER** (died 1326) was the son of the preceding. In his youth he was the intimate friend of the young Prince of Wales, afterward Edward III, and served with him in the Scottish wars. He obtained great wealth by his marriage to one of the heiresses of the house of Gloucester, and, like his father, was for a time a prominent leader among the Barons. It was not until 1318 that he went over to the King, being actuated in this move by an insatiable greed for land, which had brought him into repeated conflicts with many of the nobles of the Marches. A league was formed against him, headed by the Earl of Lancaster, and in 1321 he was banished with his father. With his father he was recalled in the following year, restored to his old possessions, and overwhelmed with grants and new titles. He met the same fate as the elder Hugh. In the Barons' rising of 1326 he was taken prisoner, brought to Hereford, tried upon the charge of piracy and complicity in the death of Thomas of Lancaster, and hanged. A grandson of Hugh the younger was the "warlike bishop," Henry of Norwich, who died in 1406. He was chosen by Urban VI to lead a crusade against the followers of Clement VII, the antipope, in Flanders. A great-grandson, Thomas (1373-1400), was created Earl of Gloucester. Consult: Tout, *Political History of England, 1216-1377* (London, 1905); Davis, *England under the Normans and Angevins* (ib.,

1905); Vickers, *History of England, 1272-1485* (ib., 1912); Wylie, *England under Henry IV* (4 vols., ib., 1884-98); Wrong, *Crusade of 1383, known as that of the Bishop of Norwich* (London and Oxford, 1892).

DES PÉRIERS, də p'ryə', BONAVENTURE (?1510-44). A French satirist and story-teller, born at Arnay-le-Duc. Arriving at Lyons in 1535, he worked in collaboration with Dolet (q.v.) on his *Commentaries on the Latin Language*. In 1536 he became the secretary of Margaret of Navarre, sister of Francis I, and took a prominent part in the literary quarrel between Marot and Sagon. Two years later appeared the work by which he is probably best known, the satiric *Cymbalum Mundi*, suggesting Lucian in its mockery of superstition, old and new, with an occasional pensive seriousness very characteristic of the finer culture of the French Renaissance. The work caused such a sensation among the clergy that the Parlement of Paris immediately ordered its suppression. Whether through fear of persecution which Margaret was powerless to avert or through insanity, Des Périers committed suicide in 1544. Besides translations and poems of minor interest, among which is a curious literary courtship of a nun, he left a collection of 129 *Nouvelles récréations et joyeux devis* (1558), written at different periods during his life and published by friends after his death. The best edition of Des Périers's works is that of Lacour (Paris, 1856). Frank published a separate edition of the *Cymbalum Mundi* in 1873. Consult: Chenevière, *Bonaventure Des Périers* (Paris, 1886); Frank and Chenevière, *Lexique de la langue de Bonaventure Des Périers* (ib., 1888); Rübner, *Syntaktische Studien zu Bonaventure Des Périers* (Leipzig, 1897).

DES PLAINES (də plān') **RIVER** (Fr., of the plains). A river rising near Racine, Wis. (Map: Illinois, D 2). It flows south nearly parallel with the shore of Lake Michigan, and from 6 to 12 miles distant, to Lyons, just west of Chicago, Ill., thence southwest, uniting with the Kankakee River (q.v.) in Grundy Co., Ill., and forming the Illinois River (q.v.). It is separated from the lake by a low divide, over which during high water it discharges into the Chicago River (q.v.). For 13 miles its waters have been deflected to form the Chicago Drainage Canal (q.v.). It is 150 miles long and drains an area of 1700 square miles.

DESPOUTES, də'pört', (ALEXANDRE) FRANÇOIS (1661-1743). A French animal and still-life painter, born at Champigneulle. He was the pupil of the animal painter Niclausius, but was in the main self-taught. In 1695 he went for two years to Poland to paint portraits of the King, the royal family, and magnates of the court. On his return to France he devoted himself to painting animals and scenes of the chase and later to still life and fruit and flower pieces, and was employed by the King and the grandees of the French court. At the castle of Marly he painted portraits (now in the Louvre) of the most valuable dogs of Louis XIV, with whom he stood in high favor. He designed compositions for the Gobelins and Savonnerie tapestries. There are 27 pictures by him in the Louvre, and he is represented in many other European galleries. Although a very productive and facile painter, Desportes was always careful in his execution. His work compares favorably with that of the best Flemish masters in his line.

DESPOUTES, PHILIPPE (1546-1606). A French poet, born at Chartres. In his youth he went to Italy as secretary to the Bishop of Puy and there studied the Italian poets, especially Petrarch and Ariosto, whom he imitated in his sonnets and elegies. On his return he rose rapidly in favor and enjoyed during his lifetime the reputation of a Ronsard. He was essentially a courtier; he praised the loves of the last Valois and became Abbé and Canon of the Sainte-Chapelle and court poet. His talent, neither original nor profound, is best shown in such charming verses as *Contre une nuit trop claire* and *Rosette pour un peu d'absence*, although certain of his religious poems have a sober beauty. Editions of his works appeared in 1573, 1583, and 1592. They were also published with an introduction by A. Michiels, as *Œuvres de Philippe Desportes* (1858). *Le mariage honni* (1573) was republished in 1908.

DESPOT (from Gk. *despótēs*, *despotēs*, master, lord, ruler). An absolute ruler who carries on the government entirely in his own interests, pursuing generally a policy of cruelty and oppression. Like "tyrant" the word "despot" originally carried no odious meaning and denoted merely the possessor of unlimited power. In a modified sense, but still free from the imputations of tyranny, the title was applied to the rulers of the Greek towns of Asia Minor under the Persian domination and subsequently to the governors of the Asiatic provinces and towns of the Byzantine Empire.

DESPRÈS, JOSQUIN. See DEPRÈS, JOSQUIN.

DESPRÈS, dā'prè', SUZANNE ISABELLE (1876-). A French actress, born in Mexico. She studied at the Conservatoire in Paris and in 1897 won the first prize in comedy and the second in tragedy. She played at the Théâtre l'Œuvre and married its manager, Auroren Lugné-Poë. She also appeared at the Antoine (in *Remplacantes*), the Porte Saint-Martin (in *L'Assommoir*), etc., and in 1902 made her début at the Comédie Française in *Phèdre*. In 1910 she played in *Elektra*. She was particularly successful in Ibsen's plays. She toured Germany in 1906 and appeared in London. Consult the appreciation by Sorel, *Nouvelle Revue*, pp. 25-34 (May, 1902).

DESPRETZ, dā'prá', CÉSAR MANSUÈTE (1789-1863). A French physicist, born at Les-ines, Belgium. He was instructor of physical sciences at the Collège Henri IV in Paris and at the Polytechnic Institute and was appointed professor at the Sorbonne about 1837. His writings were published in the *Comptes Rendus* of the Paris Academy of Sciences, of which society he was a member, and in the *Annales de Chimie et de Physique* (1817-56). His *Traité élémentaire de physique* (1825; 4th ed., 1896) was adopted by the Council of Public Instruction. A product of carbon introduced by him is said to be almost as serviceable as diamond dust for polishing purposes.

DESSAIX, dā'sá', JOSEPH MARIE, COUNT (1764-1834). A French general and politician, born at Thonons, in Savoy. In 1791-92 he raised volunteers for France in Savoy and was present at the siege of Toulon and subsequently served under Napoleon in Italy. He was a member of the Council of Five Hundred and was one of the few who opposed the coup d'état of the Eighteenth Brumaire. Nevertheless, he was made a brigadier general in 1803 and rose to be general of division by 1809. His conduct at

Wagram won him the title of "the Intrepid" from the lips of the Emperor. He was created a Count in 1810 and made Governor of Amsterdam. In the Russian campaign of 1812 Dessaix was severely wounded at Borodino. In 1814 he was successful against the Allies in Savoy. After the Revolution of 1830 he was appointed commander of the National Guards at Lyons. He died Oct. 26, 1834. For the details of his life, consult Dessaix et Folliet, *Étude historique sur la révolution et l'empire en Savoie: Le général Dessaix—sa vie politique et militaire* (Paris, 1879).

DESSALINES, dā'sá'lén', JEAN JACQUES (1758-1806). A negro military leader, known as Jean Jacques I, Emperor of Haiti. He was born in Guinea, Africa (according to some accounts at Grand Rivière, Haiti), and was sold as a slave at Cap Français (now called Cape Haitien). In 1791 he entered the insurgent ranks under Biasson, and subsequently, with rank of lieutenant general, became one of the trusty subordinates of Toussaint l'Ouverture. For some time he maintained a guerrilla warfare against General Leclerc, the officer sent by Napoleon to subjugate the island, but, upon the conclusion of peace in 1802, he professed allegiance to the French, and was appointed Governor of the southern division of Haiti with rank of a general of division. Angered at the severe repressive measures of General Rochambeau, who succeeded General Leclerc, he organized and directed an uncompromising revolt, which, with the assistance of an English squadron, ended in the utter expulsion of the French. In 1804 he was appointed Governor General for life. But, infuriated by the failure of his expedition against the Spanish part of the island, he had himself crowned Emperor and proceeded to a cruel despotism. He was assassinated by two of his officers, Pétion and Christophe, the latter of whom became President of Haiti. Consult Dubroca, *Vie de J. J. Dessalines* (Paris, 1804).

DESSAU, dés'sou (first called *Dissowwe*, then *Desso*). The capital of the German Duchy of Anhalt, on the Mulde, not far from its junction with the Elbe, 67 miles by rail southwest of Berlin (Map: Germany, E 3). The town lies in a well-wooded plain, surrounded by a very fertile and richly cultivated country. The streets are broad and well shaded. The palace, dating partly from the sixteenth century, contains a collection of paintings, including some excellent examples of the early Italian, Dutch, and Flemish schools. The palace is interesting also for its fine architectural features, its suite of Old German rooms, its relics of Prince Leopold (known as "the old Dessauer"), and Napoleon. Among the other buildings of note may be mentioned the old and new town halls, the new palaces of Princess Louise and the hereditary prince, the Parliament building, the new post office, and the theatre. The church of St. Mary, built in 1512 and restored in 1857, contains several pictures by the two Cranachs, and in the vaults the tomb of Prince Leopold, the sarcophagus being surrounded by the figures of six grenadiers. The town possesses all modern utilities. Its educational establishments include a gymnasium, several technical schools, and three large libraries, one maintained by the town. It has a number of art collections in two museums, and the Amalien Stiftung, founded by the daughter of Prince Leopold in the eighteenth

century. Dessau is the birthplace of the composer Friedrich Schneider, the poet Wilhelm Müller, and the philosopher Moses Mendelssohn, the two latter being commemorated by monuments. The bridge over the Elbe was the scene of the brilliant victory won during the Thirty Years' War by Wallenstein over Count Mansfeld on April 25, 1626. The city has grown very rapidly in the last 20 years. The refining of sugar is the principal industry, but manufactures of carpet, paper, cloth, machinery, railway cars, vehicles, and spirits have been greatly prospered. It is the centre of a fertile agricultural country, and by river it carries on a lively trade in grain. Pop., 1900, 50,846; 1910, 56,606. Dessau was founded in the twelfth century by Albert the Bear, received civic rights in 1213, and upon the division of Anhalt in 1603 became the residence of the Anhalt-Dessau line. It suffered severely during the Thirty Years' War, but began to recover its prosperity in the eighteenth century. Consult Würidg, *Chronik der Stadt Dessau* (Dessau, 1876).

DESSOIR, dā'swār', LUDWIG (properly LEOPOLD DESSAUER) (1810-74). A German actor, born in Posen. He was attached to the Leipzig Theatre from 1834 to 1836, that of Karlsruhe from 1839 to 1844, and the Hof-Theatre of Berlin from 1847 until his retirement in 1872. As an interpreter of tragic rôles from Goethe, Schiller, and Shakespeare, he took high rank. G. H. Lewes preferred his Othello to that of Kean.

DE STAAL, de stāl, M. G., BARON (1822-1907). A Russian diplomat, born in Esthonia and educated at the University of Moscow. In 1845 he entered the diplomatic service in the Asiatic department of the Ministry of Foreign Affairs, five years later becoming a member of the Russian embassy at Constantinople. Subsequently he served as consul general at Bucharest, on the staff of the legation at Athens (1859), and, beginning in 1864, again at Constantinople, as counselor to the embassy. There he obtained the Porte's permission for Russia to disregard the Black Sea clauses of the Treaty of Paris. From 1884 to 1902 he was Ambassador at the court of St. James's, and in this capacity he was instrumental in averting the threatened quarrel between England and Russia over the Afghan boundary. In 1899 he represented Russia at The Hague Peace Conference.

DE STAEL, de stāl. See STAEL-HOLSTEIN.

DESTERRO, dā-stār'ró. See FLORIANOPOLIS.

DESTINN, dēs'tin, EMMY (1878-). A Bohemian dramatic soprano, whose real name is Kittl. She was born in Prague, where she received her first musical instruction on the violin. When she discovered her musical voice, she studied with Madame Loewe-Destinn, who secured for her an engagement at the Berlin Royal Opera. Here her début as Santuzza in 1898 was so successful that she was permanently engaged for Berlin. Her European fame dates from her appearance as Senta in the first Bayreuth performance of *The Flying Dutchman* in 1901. In 1907 Strauss selected her to sing the title rôle in his *Salome* at the first Paris production. In 1908 she became a member of the Metropolitan Opera House of New York and one of the prime favorites. She is not only a great singer, but also a superb actress. Her repertoire includes 80 operas.

DESTOUCHES, dā'tōsh', PHILIPPE NÉRI-CAULT (1680-1754). A French dramatist, born at Tours, Aug. 22, 1680. Of his 17 comedies,

Le dissipateur (1736) and *Le glorieux* (1732) are pronounced by Lessing "models of finer high comedy"; and the largely autobiographic *Le philosophe marié* (1727) is also a classic of the French stage. His works are commendable rather on account of the absence of great faults than from the presence of any real dramatic genius. Except in *La fausse Agnès* (1736), Destouches took his comic vocation too seriously, but he is important as a witness to the change in public feeling that was to welcome the "tearful comedy" (*comédie larmoyante*) of La Chaussée. Consult Al. Bûrner, *Destouches et ses comédies* (Albe-Royale, 1906).

DESTROYING ANGELS, or DANITES. See DANITES.

DESTRUC'TOR, REFUSE. See GARBAGE.

DESTUTT DE TRACY, dā'stut' de trās', ANTOINE LOUIS CLAUDE, COUNT (1754-1836). A French philosopher. At the outbreak of the Revolution he was a colonel in the army and was sent to the States-General as a delegate of the nobility of Bourbonnais. In 1792 he accompanied his friend Lafayette into exile, but returned secretly to France not long afterward and was cast into prison, from which only the downfall of Robespierre released him. Under Napoleon he was a senator, and after the Restoration was created a peer by Louis XVIII. As a philosopher, he represented the doctrine of sensualism, following more especially Condillac, whose system he further developed to the so-called idealism. His principal work is *Éléments d'idéologie* (1801-15). His other works include: *Grammaire générale* (1803); *Commentaire sur l'esprit des lois de Montesquieu* (1806; Eng. trans., 1811); *Traité de la volonté* (1815).

DE TABLEY, LORD. See WARREN, JOHN BYRNE LECESTER.

DETACHMENT (Fr. *détachement*, from *détacher*, to detach, from *dé*, away + *tacher*, to fasten, from It. *tacca*, tack, from Bret. *tach*, Ir. *taca*, Gael. *tacaid*, mail), MILITARY. "A body of troops separated from a higher command and intrusted with a special mission. Nearly every command of any size is composed of troops from the different arms or special services, or both, and when not constituting a division, brigade, or other authorized unit, the question arises whether to call such a command a *détachment* or to give it the tactical designation of the predominating arm or special service; if there is a predominating element, the title of the command is that of the predominating element, unless the proportion of an auxiliary arm or special service equals or exceeds that prescribed for a division, in which case the command is a *détachment*. For example: a command consisting of one regiment of infantry and one squadron is a *détachment*, while the title of a command consisting of one regiment of infantry and a troop is that of the regiment." (*Field Service Regulations*, U. S. Army, 1913.)

DETAILE, de-tā'y, JEAN BAPTISTE EDOUARD (1848-1912). A French military painter. He was born in Paris, Oct. 5, 1848. A pupil of Meissonier, his early pictures evince the same devotion to detail and finish that marks the works of his master; but he developed a broader style with better atmospheric treatment. His "Repose during Drill in Camp Saint-Maur" (1869), painted when he was 21 years old, secured him his first medal. In 1870 he took up arms for his country, but he was never unimpaired of his art and made sketches whenever he

could. It was in sketching scenes incident to camp life that he perfected his technique and made himself competent to reproduce vividly and correctly the movements of troops in preparation for battle or resting after a fight. The horrors of war he suggests rather than depicts, and his treatment may be observed in his "Salute to the Wounded" (1877). His "Movement of Troops" and "The Dream" (Luxembourg Museum), are well-known canvases. His "Passing Regiment" (1875), which is familiar by its reproductions, is the property of the Corcoran Gallery in Washington. The Metropolitan Museum of Art, New York, possesses three of his works, including the "Defense of Campigny," called by the artist his best work, and the Vanderbilt collection, on loan in the Metropolitan Museum, New York, has a like number. In collaboration with De Neuville he painted two panoramas of the campaigns of 1870-71, exhibited in Paris in 1882-83. Among his latest works are decorative paintings in the Hôtel de Ville, Paris (1902-04) and the Panthéon (1905); the "Rue du Petit Pont" (1910), an episode of the Revolution of 1830; and "General Lassalle at Wagram" (1912). He was made a chevalier of the Legion of Honor for his "Retreat." Consult: Claretie, *L'Art et les artistes français contemporains* (2d series, Paris, 1876); Goetschy, *Les jeunes peintres militaires* (ib., 1878); Valmy-Baysse, *Peintres d'aujourd'hui* (ib., 1910); and monographs by Carrel (ib., 1882) and Vachon (ib., 1897).

DETAINEE (from Lat. *detinere*, from *de*, off + *tenere*, to hold). The technical term of the common law for a withholding of the possession of property. The gist of the act is not the manner in which the adverse possession was acquired—this may have been lawful or unlawful—but the continued detention of the property from one who claims the right to the possession thereof. No question of title or ownership is necessarily involved in the notion of a detainee, as one who is not the owner may nevertheless be entitled to the possession of the property, and, on the other hand, the owner may be guilty of an unlawful detainee of his own land or goods. A detainee is always an act of force and may be lawful or unlawful. The appropriate remedy where goods are unlawfully detained is *detinue*, or *replevin*, and if, after demand made, the holder refuses to return them, he is deemed to have converted them to his own use and becomes liable to an action in trover for damages. An unlawful detainee of lands gives rise to a right of entry or, in modern practice, to an action of ejectment. Trespass is not available if the original entry was rightful, nor can any action be employed whose purpose is to try the question of title, as that is not involved. When a detainee follows upon a wrongful entry, it may, nevertheless, be valid, as when one, in violation of law, forcibly recovers possession of his land from an intruder. Here the illegal entry is punishable, but in some jurisdictions the subsequent possession of the owner of the land will not be disturbed. See CONVERSION; DETINUE; FORCIBLE ENTRY.

DÉTAMPES, dâ'tâmp', DUCHESSE. See ESTAMPES, ANNE DE PISSELEU, DUCHESSE D'.

DETECTIVE (from Lat. *detectus*, from *de-tegere*, expose, from *de*-neg. + *tegere*, to cover). One who engages in the work of securing evidence respecting persons suspected of wrongdoing for the purpose of having it used for or against

them in civil or criminal proceedings. He may be a public officer or a private employee. In many cities there are extensive detective bureaus, whose members are in no way connected with the official police or constabulary establishments. Some states forbid persons to act as detectives without a license from a court or other official source. A detective does not become an accomplice of a criminal even when his knowledge of the criminal's plans would have enabled him to prevent the commission of the crime. His act in entrapping a criminal, if limited to mere entrapment, does not render him liable to punishment, nor does it in any way excuse or exonerate the criminal.

DETERMINANTS (Lat. *determinans*, pres. part. of *determinare*, from *de*- + *terminare*, to bound, limit). Certain algebraic functions remarkable for their brevity of notation and their wealth of significant properties. $\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} \Sigma = a_1b_2 - a_2b_1$, or (a_1b_2) are merely other notations for $a_1b_2 - a_2b_1$. The first form is commonly used in elementary mathematics. Similarly

$$\begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

represents $a_1b_2c_3 + a_2b_3c_1 + a_3b_1c_2 - a_2b_1c_3 - a_3b_2c_1 - a_1b_3c_2$. Such functions are called determinants, and the quantities $a_1, b_1, c_1, a_2, b_2, c_2, \dots$ are called elements. The first or square form of notation is called the array notation. If there are more columns than rows, the form is called a *matrix*. An array of two columns and two rows is called a determinant of the second order, one of three columns and three rows a determinant of the third order, and so on. In the expansion of a determinant of the second order there are two terms, each containing the letters a, b , but differing in the arrangement of the subscripts, 1, 2. In the expansion of a determinant of the third order there are six terms, each containing the letters a, b, c , but differing in the arrangement of the subscripts 1, 2, 3. Thus, there are two terms in the expansion of a determinant of the second order, and six in one of the third order, half of which are positive and half negative. The signs are selected according to the arrangement of the subscripts. If there is an even number of inversions in the order of the subscripts of any term, its sign is considered plus; if an odd number, its sign is considered minus; e.g., in the term $a_1b_2c_3$, 3 standing before 2 is an inversion, since the natural order is 2 before 3; likewise 3 before 1 and 2 before 1 are inversions; there being three inversions, the sign is minus. A determinant of the fourth order contains 16 elements, and its expansion contains 24 terms. In general, a determinant of the n th order contains n^2 elements, and its expansion $n(n-1)(n-2) \dots 2 \cdot 1$, or $n!$ terms. Some of the leading properties of determinants are: 1. If two adjacent columns or rows of a determinant are interchanged, the sign only of the determinant is changed; if a column or row is transposed over an odd number of columns or rows, the sign only of the determinant is changed; if a column or row is transposed over an even number of columns or rows, the determinant is unchanged. 2. If the columns are made rows, and conversely, the determinant is unchanged. 3. If the elements of a row or column are added to the corresponding elements of another column or row, the value of

the determinant is unchanged. 4. Multiplying the elements of any column or row by a number multiplies the determinant by that number. 5. If two columns or two rows are identical, or if the elements of any row or column are all zeros, the determinant vanishes. Such properties are of great aid in evaluating determinants.

Various methods of expansion have been devised by which the terms, each containing one element and only one, from each column and each row, can readily and systematically be formed. While these methods can best be obtained from a textbook on the subject, minor determinants will be explained here, since they furnish a simple means for expanding determinants of degrees higher than the third. If the column and row to which any element belongs are suppressed, the resulting determinant is called a first minor of the given determinant, or the cofactor of the given element. If two rows and two columns are suppressed, the resulting determinant is called a second minor of the given determinant, and so on. Thus, in

$$\Delta = \begin{vmatrix} a_1 & b_1 & c_1 & d_1 \\ a_2 & b_2 & c_2 & d_2 \\ a_3 & b_3 & c_3 & d_3 \\ a_4 & b_4 & c_4 & d_4 \end{vmatrix}$$

$(b_2c_4d_1)$ is a first minor of Δ and a cofactor of the leading element a_1 , and (a_1b_2) is a second minor of Δ .

If the cofactors of a_1, b_1, c_1, d_1 are denoted by A_1, B_1, C_1, D_1 , then it can be shown that $\Delta = a_1A_1 + b_1B_1 + c_1C_1 + d_1D_1$. It should be observed that A_1, B_1, \dots involve their own signs, and that in the above equation B_1 and D_1 are negative. Thus, a determinant of the n th order may be expanded in terms of determinants of the $(n-1)$ th order, and so on. Determinants also admit, in their abridged form of notation, of the fundamental operations of addition, subtraction, and multiplication (including involution).

These functions are of great importance in the solution of simultaneous equations. The roots in the case of two linear equations, $a_1x + b_1y = c_1$ and $a_2x + b_2y = c_2$, are expressed thus:

$$x = \frac{(c_1b_2)}{(a_1b_2)}, y = \frac{(a_1c_2)}{(a_1b_2)}. \text{ In the case of three equations involving three unknowns, of the type } a_1x + b_1y + c_1z = d_1, a_2x + b_2y + c_2z = d_2, a_3x + b_3y + c_3z = d_3, \text{ the roots are}$$

$$x = \frac{(a_1b_2c_3)}{(a_1b_2c_3)}, y = \frac{(a_1b_2c_3)}{(a_1b_2c_3)}, z = \frac{(a_1b_2c_3)}{(a_1b_2c_3)}.$$

In the case of n linear equations involving n unknowns,

$$x = \frac{(b_1b_2 \dots b_n)}{(a_1b_2c_3 \dots c_n)}.$$

For n homogeneous linear equations, the determinant notation serves to express the necessary and sufficient condition for the consistency of the system. Thus, in the system $a_1x + b_1y + c_1z = 0, a_2x + b_2y + c_2z = 0, a_3x + b_3y + c_3z = 0$, if $(a_1b_2c_3) = 0$, the equations can be satisfied by a set of values of x, y, z . This determinant of the coefficients is called the *discriminant* or the *eliminant* of the system of equations. It is the expression which results from eliminating the unknowns from the given equations. The discriminants of higher equations also may be expressed in determinant form. Thus, the eliminant of two equations, one of the m th and the other of the n th degree,

may be found by a method known as Sylvester's *dialytic process*; e.g., to form the eliminant of $px^2 + qx + r = 0$ and $ax^2 + bx^2 + cx + d = 0$, multiply the members of the first equation by x and x^2 , and the second by x , and form a system of five equations considering x^2, x^2, x^2 , and x as the unknowns. The eliminant is

$$\begin{vmatrix} 0 & 0 & p & q & r \\ 0 & a & b & c & d \\ a & b & c & d & 0 \\ 0 & p & q & r & 0 \\ p & q & r & 0 & 0 \end{vmatrix} = 0.$$

If u, v, w are functions of x, y, z , the determinant

$$\left(\frac{du}{dx}, \frac{dv}{dy}, \frac{dw}{dz} \right) \equiv \frac{d(u, v, w)}{d(x, y, z)} \equiv J(uvw)$$

is called the Jacobian of the system u, v, w , with respect to x, y, z . In the particular case where u, v, w are the partial differential coefficients (see CALCULUS) of the same function of the variables x, y, z , it is called the Hessian of the primitive function. These and other expressions play an important part in expressing the properties of certain curves (q.v.) and surfaces; e.g., it is shown in modern geometry that if the first polar of any point A , with respect to a curve $u = 0$, homogeneous in x, y, z , has a double point B , the polar conic of B has a double point A . The locus of the double point B is expressed by the Hessian

$$\begin{vmatrix} a & h & g \\ h & b & f \\ g & f & c \end{vmatrix} = 0$$

which is satisfied by x, y, z , and in which a, b, c, \dots are differential coefficients of the second order. This function is also an example of a covariant. See FORMS.

The first idea of determinants has generally been attributed to Leibnitz (1693). There is no doubt, however, that Seki Kowa (1642-1708), the Newton of Japan, knew of these functions some years before the idea occurred to Leibnitz. Seki treats of them in his *fukudai* problems as early as 1683 and evidently knew of them even before this date. Leibnitz merely asserted that the condition for the simultaneous nature of the equations $10 + 11x + 12y = 0, 20 + 21x + 22y = 0, 30 + 31x + 32y = 0$, is that the expression $10 \cdot 21 \cdot 32 - 10 \cdot 22 \cdot 31 - 11 \cdot 20 \cdot 32 + 11 \cdot 22 \cdot 30 + 12 \cdot 20 \cdot 31 - 12 \cdot 21 \cdot 30$ shall vanish. Seki, however, treats of n equations; he knew that the number of terms in the expansion of a determinant of the n th order is $n!$; and he knew the law of interchange of rows and columns. Following the work of Leibnitz, but entirely ignorant of that of Seki, Cramer (1750) added somewhat to the theory, treating the subjects wholly in relation to sets of equations. The recurrent law was first announced by Bézout (1764). But it was Vandermonde (1771) who first recognized determinants as independent functions, giving a connected exposition of the theory, and hence he deserves to be called its formal founder. Laplace (1772) gave the general method of expanding a determinant in terms of its complementary minors. Immediately following, Lagrange (1773) treated determinants of the second and third orders, being the first to apply these functions to questions foreign to eliminations, and he discovered many special properties. Gauss (1801) introduced the name "determinants," although not in

its present sense; he also arrived at the notion of reciprocal determinants and came very near the multiplication theorem afterward given by Binet (1811-12) and Cauchy. With the latter (1812) the theory of determinants begins in its generality. The next great contributor, and the greatest save Cauchy, was Jacobi (from 1827). With him the word "determinant" received its final acceptance. He early used the functional determinant already mentioned, and which Sylvester has called the Jacobian, and in his famous memoirs, in Crelle for 1841, he specially treats this subject, as well as that class of alternating functions known as alternants. But about the time of Jacobi's closing memoirs, Sylvester (1839) and Cayley (qq.v.) began their great work, a work which it is impossible to summarize briefly, but which represents the development of the subject to the present time. The study of special forms of determinants has been the natural result of the completion of the general theory. Axi-symmetric determinants have been studied by Lebesgue, Hesse, and Sylvester; per-symmetric determinants by Hankel; circulants by Catalan, Spottiswoode, Glaisher, and Scott; skew determinants and Pfaffians, in connection with the theory of orthogonal transformation, by Cayley; continuants by Sylvester; Wronskians by Christoffel and Frobenius; Jacobians and Hessians by Sylvester; and symmetric gauche determinants by Trudi. The theory as a whole has been most systematically treated by F. Brioschi (1824-97), well known as the editor of the *Annali di Matematica*, whose masterly treatise on determinants is a standard (French and German translations, 1856. Consult also his *Opere matematiche*, Milan, 1901-). Consult: Muir, *Theory of Determinants in the Historical Order of its Development* (London, 1906-11); Balizer, *Theorie und Anwendungen der Determinanten* (Leipzig, 1881); Doster, *Éléments de la théorie des déterminants* (Paris, 1877); Scott, *Theory of Determinants* (Cambridge, 1880; 2d ed., 1904); Salmon, *Lessons Introductory to the Modern Higher Algebra* (Dublin, 1876); Merriam and Woodward, *Higher Mathematics* (New York, 1898); Jacobi, *Über die Bildung und die Eigenschaften der Determinanten* (Leipzig, 1896); Kowalewski, *Einführung in die Determinantentheorie* (ib., 1909); Netto, *Die Determinanten* (ib., 1910).

DETERMINATE PROBLEM. In algebra or geometry, a problem of a limited number of solutions; e.g., given the base, perimeter, and area of a triangle to construct it. In this problem there are, in general, four solutions. But if any one of the three elements is omitted, the problem becomes indeterminate. The equation $2x + 3y = 12$ can be satisfied by an indefinite number of values of x and y ; hence it is indeterminate, but the equation $3x^2 - 12 = 0$ has only two roots, 2, -2; hence it is determinate. See DIOPHANTINE ANALYSIS.

DETERMINING TENDENCY. A term used in experimental psychology to explain the continuity of thought or action. Hobbes, in the *Leviathan*, distinguishes between mental discourse that is unguided, without design and inconstant, and mental discourse that is regulated by some desire or design. The first of these kinds of discourse is evidently realized in dreams and reverie. The phenomena here involved are explained by reference to associative tendencies. (See ASSOCIATION OF IDEAS;

DISPOSITION.) The second mode of discourse, in which ideas seem to be regulated or guided, as happens when we are thinking out a problem, was supposed by Hobbes to be governed by the continued presence of some persistent idea; an emotion, e.g., would be especially effective because it would make a deep impression, would therefore frequently recur, and would thereby prevent the mind from wandering. Bain goes further and asserts the necessity of an habitual attitude, of an emotion, occupation, or pursuit, which not only determines some one out of many possible trains of ideas, but also "combines itself with every casual impetus given to the mental trains so as to constitute an element of the composite effect." Furthermore, he suggests the need of a "positive stimulus, a second starting point, to individualize and determine the bent of the suggesting power to one or other of many associated ideas." Thus, because of an habitual attitude, a naked circle is rich in associations to the geometer, but it does not follow that "every circle shall hurry the mind of the geometer all through the Third Book of Euclid." The associative links in this case are good and sound, but "some one of the properties of the circle is resuscitated by preference," and this arousal determines the bent, or affords a second starting point of the particular train.

Bain has here a complete mechanism for the explanation of a regulated course of ideas, though, as it stands, it cannot meet the requirements of our current psychology. In the first place, his "ideas" are logical, not psychological in character; and secondly, the presence of a persistent idea that holds throughout the course of a train of thought is not discoverable under experimental conditions. It is found that the idea which is present as a starting point soon drops out of consciousness, though not before the meaning of the idea has aroused a tendency, known as the "determining tendency," which directs the course of subsequent ideas. The nature of the determining tendency can, perhaps, be best explained by reference to experiments. The idea, the meaning of which arouses the determining tendency, is known in the psychology of action as the idea of end; in the psychology of thought, as the instruction or problem. When an observer comes for the first time to an experiment, he is *instructed* what to do (idea of end), or when and what to observe (instruction). The instruction sets up a determining tendency, which facilitates the appearance of ideas in accordance with the experimenter's meaning and blocks all others. The determining tendency is not always, however, immediately effective; if, for example, the observer has been instructed to react or to observe upon the appearance of a signal, the determining tendency set up by the instruction is, as it were, held in abeyance until it is touched off or released by the signal. Moreover, it frequently happens, when the experiment has been many times repeated, that the instruction is not consciously remembered; yet, on the appearance of the signal, the observer continues to act in accordance with the original instruction.

It is easy to find examples of these phenomena in everyday life; any purpose, aim or ambition, intention or resolution, may set up a determining tendency, and any opportunity, command, or suggestion may serve as a "signal" to touch-off the determination. Here, too, the

original purpose with its idea of end may be entirely forgotten, but the opportunities and suggestions are nevertheless accepted as if the original idea were continually present in consciousness. There is, however, one exception to this statement. If two determining tendencies interfere, the stronger of the two will modify the weaker; an example of such interference is given under Abstraction (q.v.).

The determining tendency is physiological in nature; it is unconscious in its operation, though the determination itself may be represented in consciousness; and it must be both inhibitory and facilitative in character. The nature of the underlying physiological processes is, of course, hypothetical; we can only suppose that they are nervous coordinations and integrations, in part common to the race and transmitted from one generation to another, in part acquired in the individual lifetime, either by way of habit or under stress of some salient experience. See ACTION; DISPOSITION; DISCRIMINATION.

Consult: Hobbes, *Works*, vol. iii (London, 1839); Bain, *The Senses and the Intellect* (ib., 1894); Ach, *Ueber d. Willensstatigkeit u. d. Denken* (Göttingen, 1905); Titchener, *Experimental Psychology of the Thought Processes* (New York, 1909); *Text-Book of Psychology* (ib., 1910).

DETERMINISM. The name given to the view that every event in time, psychic as well as physical, has a cause (see CAUSALITY), and that, the cause being given, the event follows unvaryingly. It is opposed to indifference or indeterminism, which maintains that, at least in the phenomena of the human will, the temporal antecedents do not definitively determine the event. These opposing doctrines have their main interest in the sphere of ethics, as determinism is generally assumed to be true of all events except volition. The frankest of indeterminists, Prof. W. James (q.v.), admits that his doctrine is an advocacy of chance, pure and simple. The determination of will by motives has until recently been questioned, mainly because it was thought to carry with it a denial of moral responsibility. But this has been stoutly denied by many determinists with a good show of reason. Of late, however, indeterminists such as Bergson (q.v.) have based their views not so much on ethical as on experimental grounds. Bergson maintains that the very nature of time as experienced precludes the deterministic hypothesis. The argument may be stated briefly as follows: We never experience anything twice in exactly the same way. The memory of the former experience always modifies the second experience. Hence there can be no such thing as exact repetition; and where there is no repetition there can be no determinism, for determinism presupposes that the same antecedent upon repetition is always followed by the same consequent. Other opponents of determinism base their objections upon considerations derived from biology. Driesch is perhaps the best-known representative of biological indeterminists. The whole question of determinism is much more debatable now than it was two decades ago. See ETHICS; CHANCE; FREE WILL; WILL; MECHANISM; FINALISM; and consult the authorities referred to under ETHICS; also James, *The Will to Believe* (New York, 1897); Fouillée, *La liberté et le déterminisme* (2d ed., Paris, 1883); Ward,

Naturalism and Agnosticism (New York, 1899); Bergson, *Time and Free Will* (London, 1910); Driesch, *Science and Philosophy of the Organism* (ib., 1907-08); Palmer, *Problem of Freedom* (Boston, 1911).

DETINUE (OF. *detinu*, from Lat. *detinere*, from *de*, back + *tenere*, to hold). A common-law action for the recovery of specific chattels, wrongfully detained from the claimant, or their value, together with damages for their detention. It is immaterial whether the defendant came into possession of the chattels lawfully or unlawfully, so long as he has no present right to retain them as against the claimant. Thus, if the defendant held goods as a gratuitous bailee, his possession would be lawful until a demand was made by the proper party for their return; but in case of refusal to do so, the claimant might maintain *detinue*, as the detention would then be unlawful. Demand before suit is not necessary if the original taking was wrongful. The plaintiff need not be the owner of the detained chattel in order to maintain the action. It is sufficient if he has such an interest in the property as to have a right to its immediate possession. A judgment in *detinue* was formerly enforced by a special form of execution, called a writ of *distingas* (q.v.). This has been abolished in England, but is retained in several of the United States. See COMMON FORMS; COMMON LAW; PLEADING; REPLEVIN; TROVER.

DETMOLD, dēt'môlt (OHG. *Theotmalli*, *Thiatmalli*, people's court). The capital of the German Principality of Lippe and residence of the Prince, situated on the Werre, at the eastern edge of the Teutoburg Forest, about 47 miles southwest of Hanover (Map: Germany, C 3). It consists of an old and a new town, the latter of which is well built, and adorned with many fine public walks and gardens. The chief buildings are the old and new palaces, the former of the sixteenth century, the Rathaus, and theatre. Its educational institutions include a gymnasium, a manual training school, a deaf and dumb school, and a library of 120,000 volumes. The industries include the manufacture of buttons, labels, tobacco, cloth, linen, leather, furniture, and beer. Marble and gypsum are quarried. Pop., 1900, 11,971; 1905, 13,157; 1910, 14,295. The sturdy "Senner" race of horses is bred near Detmold. The Externsteine, a much visited group of five rocks, with a grotto and a relief of the Descent from the Cross, are in the vicinity. About 2 miles to the southwest of the town, on the Grotenburg, one of the highest points of the Teutoburg Forest, stands the colossal Hermanns-Denkmal, or Arminius Monument, erected in honor of the famous Cheruscan Prince who gained here a signal victory over the Roman general Varus in the year 9 A.D. The poet Ferdinand Freiligrath was born here in 1810. Detmold was also the scene of a victory of Charlemagne over the Saxons in 783. In 1011 it was presented by King Henry II to the bishops of Paderborn, and from them it came to the Lippe family. It received civic rights in 1350.

DE TREVILLE, de trā'vil', YVONNE (1881-). An American prima donna, born at Galveston, Tex. She studied under Madame Marchesi at Paris, and made her début when only 16 years old, in New York, at that time creating the principal part in *La Bohème*. Thereafter she sang entirely abroad, in *Lakmé*

at the Opéra Comique, Paris, at the Stockholm Royal Opera and the St. Petersburg Symphony Concerts (1903-04), the Cairo Khedivial Opera, and the St. Petersburg Imperial Opera (1904-05), and from then until 1909 in Bucharest, Berlin, Budapest, Nice, Brussels, Vienna, Munich, and Cologne. In 1910-11 she made operatic and concert tours in Austria, Hungary, Germany, Poland, Rumania, and Russia.

DETROITUS (Lat., a rubbing away, from *detere*, to rub away, from *de*, down + *terere*, to rub). A general geological term applied to fragmental accumulations formed by the disintegration of rocks. See EROSION.

DE TROBRIAND, (PHILIPPE) REGIS (DE KEREDERN). See TROBRIAND.

DETROIT, *dé-troit'*. The chief city of Michigan, a port of entry, and the county seat of Wayne County, on the Detroit River, 18 miles from Lake Erie. It extends 11 miles along the border of the Detroit River and the shores of Lake St. Clair and is in lat. 42° 19' N. and long. 82° 58' W., 85 miles east-southeast of Lansing, 285 miles east by north of Chicago, and 251 miles west by south of Buffalo (Map: Michigan, F 6). The altitude of Detroit is about 600 feet; mean annual temperature, 48.4° F.—January, 24.6°; July, 72°; average annual rainfall, 36.19 inches.

The river, sometimes called "The Dardanelles of the New World," which is here the boundary between the United States and Canada, is ½ mile wide and 30 to 50 feet deep. It affords a splendid harbor, with a water front of about 11 miles. Fort Wayne, with its extensive works, commands the channel. Ferries connect with the Canadian side. The river contains many beautiful islands, which, with those in Lake St. Clair, are popular as places of summer residence and as resorts. Grosse Isle is the largest of these river islands, and Belle Isle has been converted into the city's finest park.

The city has an area of 41.76 square miles and is finely situated on ground rising gradually from the river. It has a reputation for broad, clean, well shaded and paved streets. Of a total of about 650 miles of thoroughfares, more than one-half is paved, the principal streets being laid with brick or asphalt. Most of the streets cross at right angles, but these are intersected by several broad avenues, radiating from the Grand Circus, a semicircular park of 5½ acres in the heart of the city. Woodward Avenue extends through this and divides the city into nearly equal portions. This intersection of streets and avenues has resulted in a number of small triangular parks, some of which contain handsome fountains. Woodward Avenue, the principal business street and at its northern end the centre of a fine residence district, is the location of many of the city's most prominent buildings. The Campus Martius, a considerable plot of ground about ½ mile from the river, is a part of Woodward Avenue. Jefferson Avenue, in part also an important business centre, and West Fort Street contain costly dwellings. Michigan, Gratiot, and Lafayette avenues have many notable buildings. Fine residences are on the Grand Boulevard, on Cass Avenue, and on the streets in the northern section of the city, Virginia Park, Boston and Chicago boulevards, and Arden Park. The banking houses are in Griswold Street. Grand Boulevard, 150 to 200 feet wide and paved with macadam, has its head

at Jefferson Avenue, and its terminus on the opposite side of the city. It surrounds the heart of the city, being about 12 miles long, and is a magnificent thoroughfare.

The street railway system of Detroit operates 533 miles of track, including the interurban systems to Mount Clement, Port Huron, Flint, Pontiac, Ypsilanti, Ann Arbor, Jackson, Trenton, and Toledo.

Buildings. The Wayne County courthouse is the largest and one of the most attractive of the public edifices. The City Hall, facing the Campus Martius, is 200 feet long by nearly 100 feet wide, built of sandstone, at an original cost of \$600,000. On the campus is the Soldiers' and Sailors' Monument, by Randolph Rogers, 55 feet high, and surmounted by a representation of "Michigan." The Majestic, Ford, Dime Bank, Free Press, Hammond, and Penobscot buildings, near the City Hall, are Detroit's finest office buildings. The Post Office, Masonic Temple, Federal building, Chamber of Commerce, Board of Commerce, Detroit Athletic Clubhouse, Y. M. C. A. building, Harper, General, and Grace hospitals, and the Hotel Pontchartrain are notable. Among the finest ecclesiastical structures are First Unitarian, First Congregational, First Presbyterian, Fort Street Presbyterian, North Woodward Avenue Congregational, Second Church of Christ (Scientist), Sacred Heart of Mary (Roman Catholic), Woodward Avenue Baptist, Woodward Avenue Presbyterian, St. John's (Protestant Episcopal), and Christ Episcopal churches, St. Paul's Cathedral (Episcopal), and Temple Beth El. The Museum of Art has a library, and valuable collections on art, archaeology, science, local and general history. Its special features are the Stearns collection of Oriental curios, one of the finest in America, and the Scripps collection of old masters, which includes valuable specimens of famous artists.

Parks. The most notable feature of the public-park system, which includes over 1200 acres, is the island park, Belle Isle, of 707 acres. It lies opposite the eastern section of the city, with which it is connected by an iron bridge, erected in 1889 at a cost of \$315,000. The island with improvements has cost the city \$9,000,000. The beauty of its river location is supplemented by a series of interior lakes and canals, which extend around the island, while a further improvement is projected in the reclamation of the shoal at the western end of the island, which will add at least 100 acres to its territory. On this projection will be erected the Scott Fountain, for which the late James Scott gave his entire fortune of nearly \$500,000. Palmer Park (141 acres), on Woodward Avenue, 6 miles north of the City Hall, contains a famous log cabin and other historical relics and a large Colonial casino. It was acquired by gift in 1894 from the late Senator Thomas W. Palmer and his wife Elizabeth Merrill Palmer. The total park and boulevard area is 1243 acres.

There are several cemeteries in the city, the most notable of which are Elmwood (Protestant) and Mount Elliott (Roman Catholic), both in the eastern section of the city, of great natural beauty and containing handsome monuments. Just without the city are several large new cemeteries, notably Woodlawn, Evergreen, and Grand Lawn.

Institutions. Detroit has, besides numerous

public and parochial schools and private secondary institutions of learning, a normal school (city), Detroit University (Jesuit, opened in 1877 under the name of Detroit College), the Detroit College of Law, the Michigan College of Medicine, which maintains schools of dentistry and pharmacy. The Detroit Bar Library has over 10,000 volumes, and there are several educational and institutional libraries. The public library, founded in 1865, contains 278,100 volumes in the central library and has established nine branches, besides one in each of the six high schools.

The city has a poor fund, administered by a Poor Commission. There are about 30 private charities. The Detroit Association of Charities is a general organization, representing a number of allied institutions. The House of Correction, which has a plant valued approximately at \$500,000, with accommodations for 600 inmates, has a wide reputation as a reformatory institution. Besides the United States Marine Hospital, there are five large general hospitals, including Grace, Harper, and General hospitals, in connection with which are training schools for nurses. There is also the Herman Kiefer Hospital for contagious diseases. Other institutions are St. Mary's and Red Cross hospitals, Home for the Friendless, St. Vincent's Orphan Asylum, Protestant Orphan Asylum, Arnold Home for the Aged and Hospital for Incurables, Thompson Home for Old Ladies, Florence Crittenton Home, Deaconess's Home, and Home for the Aged Poor.

Commerce and Industry. There are a number of conditions which favor Detroit as a commercial and industrial centre. Its position in the southeastern part of the Lower Michigan Peninsula gives it a natural command over the trade of that region and at the same time places it within easy reach of the country to the south; while its location upon the narrow strait leading from Lake Erie to Lake St. Clair and thence to Lake Huron brings it into relation with the immense lake traffic and with the Canadian trade, a number of the railroads of the Dominion naturally making their connection with those of the United States at this point. A new tunnel under the Detroit River, built for the Michigan Central Railroad, has greatly increased the volume of trade between Detroit and Canada and expedited travel between New York and the West.

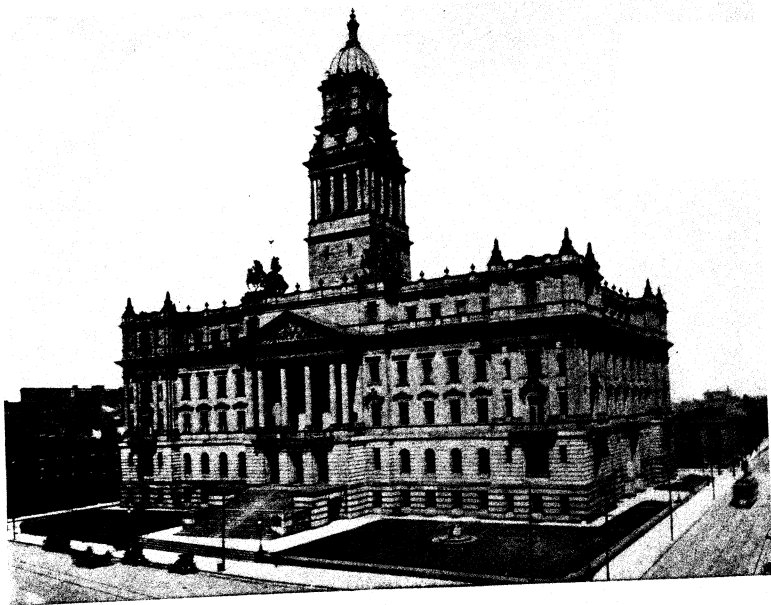
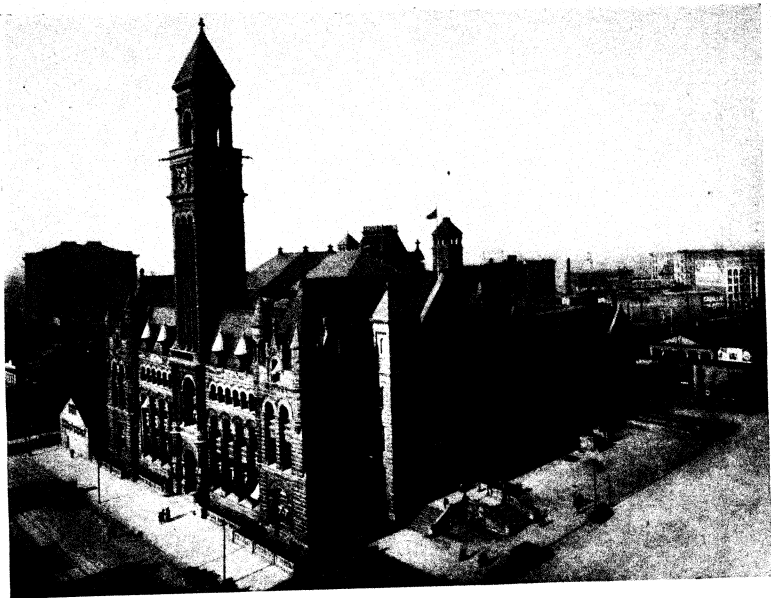
Detroit ranks first among the northern border ports in the extent of its foreign trade and is first in the amount of its exports. For the year ending June 30, 1913, the imports amounted to \$9,158,669, and the exports \$82,222,404. About three-fourths of the total trade is with Canada and the larger part of the remainder with England. The principal exports are hog products, including hams, bacon and lard, manufactures of iron and steel, cotton, corn, lumber, and coal. The number of vessels in foreign trade entering the port in the fiscal year ending June 30, 1912, was 2232, with an aggregate tonnage of 662,356; the vessels clearing, 2172, with a total of 644,795 tons. The river is open to navigation about eight months in the year.

The manufactures are noted for their variety as well as their extent. Among the leading products are automobiles, stoves, freight cars, adding machines, alkaline products, drugs, varnish, paint, and oils, some of the establishments that produce these articles ranking among the

largest in the world. Detroit has also extensive drydocks and shipbuilding plants and the largest seed house in the world. At one time the city was a leading lumber market of the country, and the sawing and planing mill industry was extensive; all this has declined considerably, but there are a number of allied industries, such as the manufacture of furniture and carriages, which have attained importance. The preparation of furs for market is of less importance than formerly. Detroit, being midway between the coal mines of Pennsylvania and Ohio and the iron and copper mines of Michigan, is the logical point for the manufacture of the iron, copper, and brass products. These industries have grown rapidly in recent years, as has also the manufacture of aluminum. The manufacture of pharmaceutical preparations and of malt liquors, and the slaughtering industry, though of recent development, have attained considerable dimensions. Other important manufactures are those of chewing and smoking tobacco, cigars and cigarettes, and clothing. The recent industrial growth of the city has been noteworthy; in the period between 1904 and 1909 the number of manufacturing establishments increased from 1362 to 2036. The capital invested in the various industries in 1909 was \$190,125,000, the value of the product \$252,992,000, and the value added by manufacture \$122,775,000.

Government. The government is vested in a mayor and a unicameral council, elected biennially. There are a number of administrative boards and commissions, most of which, with other important municipal officials, are appointed by the Common Council on nomination of the executive. The Board of Health is appointed by the State governor. Commissioners of public works, parks and boulevards, and police are appointed by the mayor. The city clerk, treasurer, justice of the peace, police justices, and members of the Board of Education, who serve for four years, are chosen by popular vote. There is also a Board of Estimates, constituted of two representatives from each ward and five members from the city at large, with certain ex-officio members, which acts upon the general city estimates and all other measures for raising money. The United States District Court for Eastern Michigan sits at Detroit, and the United States Internal Revenue office and the department in charge of the lake light-houses, are located here.

Finance. The net debt of the city on July 1, 1913, was \$7,866,221, the per capita debt being exceptionally low. The legal borrowing limit is fixed at 4 per cent of the assessed valuation. The city tax budget for 1913 was \$10,127,183, and in addition there was derived from licenses and franchises \$225,000 and from special taxes (used to pay salaries of school teachers), \$900,000. The school budget for the year was \$4,301,389.85. The city owns and operates its light plant and water works. For the fiscal year ending June 30, 1914, the Public Lighting Commission was allowed \$674,276.67, of which \$239,942.78 was for operation and the balance for extensions. The water-works system comprises some 876.5 miles of mains, with the pumping station situated at the southeasterly part of the city. The supply is taken from the Detroit River. The plant, which was valued in 1913 approximately at \$12,000,000, has a daily capacity of 184,662,480 gallons.



DETROIT

THE POST OFFICE (UPPER)
WAYNE COUNTY COURT HOUSE (LOWER)

Population. Detroit was in 1910 the third largest of the Great Lake cities and ranked ninth among those of the United States. The following figures indicate its growth: 1820, 1422; 1860, 45,619; 1880, 116,340; 1890, 205,876; 1900, 285,704; 1904, 317,591; 1910, 465,766. Of the last, 156,565 were foreign born, the German and Canadian elements being the largest. About two-thirds of the native born were native white of foreign parents. The colored population numbered only 5741.

History. The site of Detroit was visited by Frenchmen as early as 1648 and again by La Salle in 1670, but no permanent settlement was made until 1701, when Sieur de la Mothe Cadillac, the first Commandant of the French territory in this vicinity, built here Fort Pontchartrain and established a small trading village. On Nov. 29, 1760, an English force, under Major Robert Rogers of "Rogers Rangers," took possession, and in 1763, from May 9 to October 12, the Indians under Pontiac besieged the village, making frequent attacks. After an heroic defense Detroit was saved, being the only frontier post west of Niagara and Fort Pitt which was not captured. In 1778, when a new fort, Fort Lernoult, was built, the place had only about 300 inhabitants, all of whom lived in rude log cabins. Throughout the Revolution it was the headquarters of the English forces in the Northwest and the point from which many Indian expeditions were sent to ravage the frontiers. In 1796 the English abandoned the fort to the Americans. The name of the fort was subsequently changed to Fort Shelby. After this the settlement grew slowly and in 1802 was incorporated as a town by the Legislature of the Northwest Territory. In 1805 it was almost completely destroyed by fire. All the buildings within the palisade, except one dwelling, were reduced to ashes. The town was immediately replanted on a larger scale with wide streets, and the rebuilding was begun at once. On Aug. 16, 1812, the fort was surrendered by General Hull to the English under General Brock. The Americans reoccupied the place Sept. 29, 1813. In 1815 Detroit was incorporated as a village, and in 1824 was chartered as a city by the Legislative Council of Michigan Territory. It was the capital of the Territory from 1805 to 1837 and of the State from 1837 to 1847, when the seat of government was removed to Lansing.

Consult: Farmer, *The History of Detroit and Michigan* (Detroit, 1889); Burton, *Cadillac's Village: A History of the Settlement, 1701-1710* (ib., 1896), and *The Building of Detroit* (1912); chapters in Parkman, *A Half Century of Conflict* (Boston, 1892), and *The Conspiracy of Pontiac* (ib., 1867); various papers in the *Michigan Pioneer Collections* (Lansing, 1874-1913); Farmer, "Detroit," in *Historic Towns of the Western States* (New York, 1901).

DETROIT. A city and the county seat of Becker Co., Minn., 194 miles by rail northwest of Minneapolis, on Detroit Lake and on the Northern Pacific and the Minneapolis, St. Paul, and Sault Ste. Marie railroads (Map: Minnesota, B 3). It is in a picturesque lake region with mineral springs and good hunting and fishing. The city contains a Carnegie library and owns its electric-light and power plant. Agriculture is the principal industry, and there are manufactures of cement products. Pop., 1900, 2060; 1910, 2867.

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DETROIT RIVER. A river or strait connecting Lakes St. Clair and Erie, flowing nearly west to Detroit and then south, and separating Michigan from Ontario, Canada. It is so called from the French word meaning "strait." It enters Lake Erie just eastward of Pointe Mouillée and is about 28 miles long, from $\frac{1}{4}$ to 3 miles wide, of considerable depth, swift in current, and admits the largest vessels. Its upper section between Fighting Island and Lake St. Clair is unobstructed, while its lower section from Detroit River Light to the same island is divided into several channels by a number of islands. It is the great waterway, with the St. Clair Lake and River, from Lakes Superior, Michigan, and Huron to Lake Erie. More tonnage of shipping is estimated to pass through this river than through any other stream in the world. There are many islands along its course, and the scenery is very beautiful. See DETROIT.

DETROYAT, dâ'trôw'ya', PIERRE LÉONCE (1829-98). A French naval officer, journalist, and author, born at Bayonne (Basses-Pyrénées). He studied at the Ecole Navale, took part in the Crimean War and in the subsequent expedition to China, and accompanied to Mexico the Archduke Maximilian, of whose ill-fated Empire he was appointed Undersecretary of State for Naval Affairs and chief of the military cabinet. He accompanied the ill-fated Princess Charlotte on her return to Europe. During the Franco-Prussian War he was for a time in command of the camp at La Rochelle. From 1860 to 1869 he was a member of the staff of *La Liberté*, which he edited from 1869 to 1876. He subsequently founded *Le Bon Sens* and *L'Etatfette*, the latter a conservative and Bonapartist journal, and in 1885-86 he edited the *Constitutionnel*. His works include the following: *La cour de Rome et l'empereur Maximilien* (1867); *L'intervention française au Mexique* (1868); *Du recrutement, de l'organisation et de l'instruction de l'armée française* (1871); *Le sénat et le scrutin de liste* (1881); *Nos possessions françaises en Indo-Chine* (1887); *Les chemins de fer en Amérique* (1886).

DETTINGEN, dêt'ting-en (Teut., the people's home, from OHG. *diot*, *diota*, MHG. *diel*, Goth. *þiuda*, AS. *þeod*, people + *ingen*, the patronymic suffix). A village in Bavaria (Lower Franconia), on the right bank of the Main. It is noted as the scene of a battle during the War of the Austrian Succession, June 27, 1743. George II of England headed the armies of the Allies. Cooped up in a narrow valley, 37,000 English, Hanoverian, and Hessian troops lay, surrounded by 60,000 French on the heights. Noailles's cannon swept the flank and rear of the Allies, and the only exit from the valley, the defile of Dettingen, was held by young De Grammont with 25,000 men. Impatiently charging upon the Allies, he was thrown back with slaughter and confusion. The French loss amounted to 6000 men; that of the Allies to 2000.

DEUCALION (Gk. Δευκαλίων). According to the Greek myth, a son of Prometheus, grandson of Iapetus, and husband of Pyrrha. The crimes of the race of men then living led Zeus to destroy them in a great flood, but Deucalion, warned by his father, saved himself and his wife in a chest (ἀράκι), which floated for nine days on the waters and then grounded on Mount Othrys in Thessaly. Later versions made

Deucalion land on Mount Parnassus, or on Athos, or even on Etna. Deucalion and Pyrrha now offered up sacrifices to Zeus and asked how the human race could be renewed. Bidden to throw the "bones of their mother" over their shoulders, they sought to obey by throwing stones; the stones thrown by Deucalion became men, those thrown by Pyrrha women. Deucalion's grave was shown at Athens, where he was said to have founded the temple of Olympian Zeus. Through his son Hellen (q.v.) he became the ancestor of the Greeks. Consult Ovid, *Metamorphoses*, i, 243-415, and Usener, *Die Sintflutsagen* (Bonn, 1899).

DEUCHER, doik'er, ADOLF (1831-1912). A Swiss statesman. He was born at Steckborn, Canton of Thurgau, and studied medicine at Heidelberg, Zurich, Prague, and Vienna. In 1855 he became a member of the council of his canton, and in 1868 he served as a member of the council established to formulate a new democratic constitution for Thurgau. From 1869 to 1873 he was a member of the National Council of Switzerland, and three years after his reelection to that body became its President (1882). In 1883 he became a member of the Federal Council, and in 1885 its Vice President; and in 1886 was elected President of the Swiss Confederacy, serving until 1887. He was reelected to that office in 1897 and 1903.

DEUNTZER, doin'tser, JOHAN HENRIK (1845-). A Danish jurist and statesman, born in Copenhagen. He fought in the War of 1864 against Germany, became professor of Civil Law at the University of Copenhagen in 1872, and in 1901, when the system of ministerial responsibility to Parliament was established, became head of the first Liberal ministry. He resigned in 1905 owing to differences in his cabinet. He wrote extensively on Danish law in all its branches.

DEUSDEBIT, or ADEODATUS. Pope from 615 to 618. He is honored as a saint on November 8.

DEUS EX MACHINA, mak't-nā (Lat., God from a machine, a translation of Gk. θεὸς ἀπὸ μηχανῆς, *Theos apo mēchanēs*). An expression borrowed from the ancient classical theatre. The tragic poets often employed the intervention of a divinity to solve abruptly a tragic difficulty and to bring about quickly the dénouement. The god was brought on by stage machinery; hence the name. Examples of the use of this device are the appearance of Heracles in the *Philoctetes* of Sophocles and of Athena in the *Iphigenia in Tauris* of Euripides. From the ancient usage the term has been extended to mean any device by which a dramatic situation is abruptly solved. On the *mechane* or *machina* in general, as used in the Greek theatre, consult Haigh, *The Attic Theatre*, pp. 209-217 (3d ed., Oxford, 1907).

DEUS-RAMOS, dā'oosh rā'mōsh, João DE (1830-96). A Portuguese poet, born March 8, 1830, at San Bartholomeu de Messines, in the Province of Algarve, and educated in law at the University of Coimbra, although he left in 1859 without taking his degree. In 1862 he left Coimbra for Beja, where he had been appointed editor of *O Bejense*, the most influential newspaper in the Province of Alemtejo. In 1868 he edited the *Folha do Sul*. At the request of friends he entered politics, and was elected Liberal deputy from Silves in 1869. But he felt it necessary to act independently of all parties and consequently resigned, although he knew

such action would kill all chance for future advancement. For several years thereafter he devoted himself to educational problems, throwing himself heart and soul into an attempt to improve the educational condition in Portugal. This was highly important work, and he did it extremely well. But many critics are inclined to the belief that the country paid too high a price for it, since he was naturally forced thereby to limit the output of his exquisite lyrics. In this field, even as things stand, João de Deus is now considered as having no equal in his generation and, saving only Camões and Garrett, no equal in the literary history of his country; and prophecy concerning his repute with posterity is especially favorable with regard to his poems of love. He has been called "the foremost poet of love, not only in Portugal, but in Europe." And this repute is his despite his incredible carelessness about public opinion, for he seldom kept copies of his poems (contenting himself generally with dictating them to his friends) and was not responsible for a single edition of his works; these were collected by friends and admirers, who were not always well informed as to what poems were, and what were not, from his pen. A great popular and scholastic festival in his honor was held on his sixty-fifth birthday. He died at Lisbon, Jan. 11, 1896, was granted a public funeral, and was buried in the National Pantheon, the Jeronymite Church at Belem. Consult: João de Deus, *Campo de flores. Poemas lyricos completos* (2d ed. by Theophilus Braga, Lisbon, 1896); Maxime Formont, *Le mouvement poétique contemporain en Portugal* (Lyons, 1892); Marco Antonio Canini, *Libro dell'amore*.

DEUSSEN, dois'sen, PAUL (1845-). A German philosopher and Sanskrit scholar, born in Oberdreis. He studied at the universities of Bonn, Tübingen, and Berlin, in 1889 was appointed professor of philosophy at Kiel, and in 1907 was made a member of the governing council of that university. His philosophy combines the systems of Kant, Schopenhauer, and the Indian sages. His works include *Commentatio de Platonis Sophista, Compositione et Doctrina* (Bonn, 1869); *Das System des Vedānta* (ib., 1883); *Der kategorische Imperativ* (Kiel, 1891); *Erinnerungen an Friedrich Nietzsche* (Leipzig, 1901); *Allgemeine Geschichte der Philosophie mit besondrer Berücksichtigung der Religionen* vols. i, ii (ib., 1894-1913); *Die Elemente der Metaphysik* (2d ed., 1890; Eng. trans. by Duff, London, 1894); *Philosophy of the Upanishads*, Eng. trans. by Geden (Edinburgh, 1906); *Outlines of Indian Philosophy* (Berlin, 1907); *Jakob Bohme: über sein Leben und seine Philosophie* (1911); *The System of the Vedānta According to Bādarāyana's Brahma-sūtras and Cankara's Commentary thereon*, trans. by Charles Johnston (Chicago, 1912).

DEUS VULT (God wills it). The rallying cry of the First Crusade, originating in the exclamation of the multitude after the completion of Pope Urban II's address at the Council of Clermont, 1095.

DEUTEROCANONICAL BOOKS. A designation of certain books which are recognized as canonical by the Roman Catholic church and the Oriental churches, rejected by the Protestant churches generally as apocryphal, and at present withdrawn from public use and treated as apocryphal by the Greek Orthodox church in Russia, Servia, and Bulgaria, and regarded as

of doubtful authority in Greece. They are Judith, Tobit, Baruch, 1 and 2 Maccabees, Ecclesiasticus, and Wisdom of Solomon; some parts of Daniel and Esther in the longer recension preserved in the Greek Bible are likewise deutero-canonical. All these works are found in the great codices of the Old Testament in Greek and in the versions made from the Greek text, and are referred to by early Christian writers in such a manner as to leave room for no doubt that they formed a part of the Scriptures which the first Greek-speaking converts to Christianity received from the Hellenistic Jews. But they were not included in the collection of books that, in the judgment of the Aramaic-speaking Jews of Palestine, possessed such a sanctity that it was necessary to wash one's hands after contact with them. Some of them, like 2 Maccabees, Wisdom of Solomon, and the Additions to Esther, were written originally in Greek and could not therefore have been considered at all in reference to this ceremony by the Palestinian rabbis. Among those that were composed in Hebrew or Aramaic some, like Baruch and Ecclesiasticus, are likely to have been thought of in this respect inasmuch as, even long after the decision, they were occasionally read and quoted as Scripture. How far this was true of the rest cannot be determined. It may be said, however, that, unless these books in the original had enjoyed a great prestige in Palestine, they would probably not have been translated into Greek and been cherished with the other biblical books by the Alexandrian Jews. As to the reasons why they were not included in the Palestinian canon, if they actually had for several generations been held in high repute and read for purposes of edification, the attitude of Josephus and the author of 4 Esdras, our earliest witnesses to the reduction of the collection to 22 or 24 books, seems to show that one consideration that had much weight was age, and that no work was included which was supposed to be later than Ezra's time. But the prevalent opinion among the Jews of Alexandria made no such distinction. They knew from the preface to Ecclesiasticus that this book could not have been written before the second century B.C. and no doubt inferred as much in regard to Esther from the preface to this book. There is no evidence that they immediately followed the example of the Palestinian rabbis in reducing their canon, or collection of religious classics, to a fixed number. On the contrary, the quotation of Enoch i-xxxvi and the Assumption of Moses by New Testament writers, and the introduction into their Bibles by various churches in early Christendom of many Jewish works clearly translated from the Greek (see APOCRYPHA), seem to indicate either that the canon of the Alexandrian Jews never was absolutely fixed or that, in addition to a canon which was itself more inclusive than the Palestinian, there was a group of antilegomena recognized by some and rejected by others. The Old Latin and Saïdic versions made from the Greek towards the end of the second century A.D. contained the deutero-canonical group, but not many, if any at all, of the antilegomena. Origen, who would not limit himself to the Hebrew canon, seems to recognize certain boundaries set for the larger canon; and Athanasius, Rufinus, and Jerome, who would not recognize as canonical any books not in the Hebrew canon, enumerates the deutero-canonical books as a special group cherished by the

Church; though the great Greek codices are not quite consistent, and Sinaiticus contains 4 Maccabees, Alexandrinus 3 and 4 Maccabees, and both 3 Esdras, they make no distinction between proto- and deutero-canonical books and, like most of the later versions, do not contain such works as the Psalter of Solomon, the Testaments of the XII Patriarchs, Jubilees, the Assumption of Moses, and the Apocalypses of Enoch and Baruch; and the councils of Hippo (393 A.D.) and those of Carthage (397 and 419) accepted the same deutero-canonical group as among the books received by the fathers to be read in the church and to be held as canonical. From these considerations it would seem extremely probable that, as a rule, the Hellenistic Jews in the second half of the second century A.D. recognized the deutero-canonical books as part of their canon, though some may have adopted the narrower canon of the Aramaic-speaking Jews of Palestine, and others no doubt counted as Scriptures quite a number of additional books. This would account for the dominant view among the early Christian fathers, and also for the disappearance in most cases of the Greek translations of the apocrypha, or pseudepigraphal books, as they are often called by Protestant writers.

There is no means of determining how extensive Philo's canon was. In his discussions with the Jew Trypho, Justin would naturally quote no book that was not recognized by him; and Melito of Sardes reports the Jewish canon he found in Palestine. Origen called the attention of the Church to the differences between its text and its canon and those of the synagogue. Athanasius, Cyril of Jerusalem, Rufinus, Jerome, Epiphanius, Gregory of Nazianzus, Ambrosiaster, and Johannes Damascenus regarded the ecclesiastical books not found in the Hebrew Bible as noncanonical, and Jerome, whose learning gave great weight to his opinion, called them apocrypha. But in practice little distinction was made between proto- and deutero-canonical books, as the writings of these fathers, the manuscripts, the versions, and the general usage show. The Greek Orthodox church has continued the somewhat vacillating attitude of the early Greek fathers. Jugie seeks to account for the exclusion of the deutero-canonical books from the Russian Bible and the frequent failure to recognize them in Greece by Protestant influence. But Ph. Meyer (*Theologische Literaturzeitung*, 1909, pp. 490 ff.) has shown that Cyril Lucaris, who was influenced by Protestantism, in theory rejected, but in practice used, these books, and that men like Metrophanes Critopolis, Korais (a very independent and scholarly theologian), Eugenius Bulgariis, and Athanasius Parsios, were not Crypto-Protestants, but only influenced by the attitude of Athanasius, Gregory of Nazianzus, and Johannes of Damascus. The Russian church is also more likely to have been influenced by opposition to Rome than by Protestantism. In the Roman Catholic church during the Middle Ages the canonicity of these books was questioned or denied by Notker (died 912), Peter of Clugny (died 1185), John of Salisbury (died 1180), Hugo a S. Caro (died 1260), Nicolas Lyranus (died 1341), and others, but in the main their authority was upheld. Cardinal Cajetan (died 1534) also followed Jerome. But at the fourth session of the Council of Trent, in 1546, the decision of the African councils in the time of Augustine was reaffirmed,

and the deuterocanonical books were recognized as of equal authority with the protocanonical. The Prayer of Manasse and 3 and 4 Esdras were not counted among them. It has been maintained that 3 Esdras was excluded through a misunderstanding, since Augustine quotes it as Scripture (*De Civitate Dei*, xviii, 36); but this is not certain. Even after the Tridentine Council a distinction has been thought justifiable by Lamy, Jahn, and others, though the language used in the decree does not seem to admit of the construction they have attempted to put upon it.

The decision of the Roman Catholic church was no doubt to some extent influenced by the attitude of the Reformers, as that of the African councils had been affected by the position taken by Jerome. Carlstadt had pursued the question historically and pointed out the distinction made in the early church. Luther was also led by his opposition to certain doctrines that found their support in the deuterocanonical books. He translated them, and declared them to be valuable for purposes of edification, but not for the establishment of doctrine, and he placed them in an appendix by themselves. The distinction he made, which was essentially the same as had already been made by many eminent fathers and medieval teachers, was expressed in the Gallic Confession of 1559, the Anglican Confession of 1564, and the Second Helvetic Confession of 1564. More radical was the action of the Council of Dort (1618), which declared them to be human works and likewise apocrypha, and the Westminster Confession (1648), which maintained that they were not inspired, did not belong to the canon, and had no more authority than any other human writings. Nevertheless Protestants had the opportunity of reading these books until the struggle about their canonicity in the beginning of the nineteenth century led the London Bible Society in 1826 to discontinue the spread of any Bible that contained these books. The example was followed, though less rigidly, on the continent of Europe, and the effect, in an era of unprecedented missionary activity on the part of the Protestant denominations, was to deprive converts abroad as well as members of these churches at home of access to the deuterocanonical books. The Church of England, however, always permitted the use of readings from them. When the Revised Version was made, they were also translated, but published separately. In recent years their value has been more and more appreciated, and an International Society for the Apocrypha has been established on whose council are many bishops of the Church of England as well as English, American, and German scholars. The interpretation of these books for a long time suffered greatly from the controversy as to their canonicity. Roman Catholic scholars felt themselves in duty bound to defend the historical accuracy of every statement occurring in them and often had to resort to violent textual emendations, improbable interpretations, and questionable apologetic methods, while Protestant scholars took an unseemly delight in exhibiting historical inaccuracies, and lost all sense of their beauty and power in the anxiety to show their unworthiness of a place in the canon. The spirit that teaches men to approach all such Scriptures with reverence and yet with critical judgment is to-day bringing about a healthy coöperation of scholars, representing very different doctrinal positions, but eager to

find out what the original text was, what the authors meant to say, and what the real significance of their writings is. Even that larger circle of books which won canonical recognition only in some smaller church province receives at present careful study on the part of Roman Catholics and Protestants alike. (See APOCRYPHA.) The great collections of Kautzsch and Charles are valuable aids to the study of this literature. It would be an advantage, however, if the historically justifiable and unobjectionable term "deuterocanonical books" could be substituted for "apocrypha," which has no special appropriateness as applied to them and only causes needless offense. See BARUCH; ECCLESIASTICUS; JUDITH; MACCABEES; SOLOMON, WISDOM OF; BEL AND DRAGON; SUSANNAH; DANIEL; ESTHER, DEUTEROCANONICAL FRAGMENTS OF; and consult: Diestel, *Geschichte des Alten Testaments in der christlichen Kirche* (Jena, 1869); Cornely, *Introductio in U. T. libros sacros I* (Paris, 1894); Kautzsch, *Die Apokryphen und Pseudepigraphen des Alten Testaments* (Tübingen, 1900); Andrée, *Les apocryphes de l'ancien testament* (Paris, 1903); Jugie, *Histoire du canon de l'ancien testament dans l'église grecque et l'église russe* (ib., 1909); Charles, *The Apocrypha and Pseudepigrapha of the Old Testament* (Oxford, 1913).

DEUTERONOMY. The name of the fifth book of the Pentateuch, derived from the Greek translation of the two Hebrew words in Deut. xvii. 18, which signify "repetition of the law." Deuteronomy contains the last injunctions of Moses to his people, delivered in the land of Moab. With the exception of chaps. xxvii-xviii, xxxiv, and a few verses elsewhere, the book is in the form of an address. There are, however, in reality, three distinct speeches. (a) chaps. i-iv, (b) chaps. v-xxvi; (c) chaps. xxix-xxxii; together with two poems, chaps. xxxii and xxxiii. The book closes with an account of the death of Moses (chap. xxxiv). It was already recognized by some of the Church fathers, e.g., Chrysostom and Jerome, that Deuteronomy is the book referred to in 2 Kings xxii as having been found in the eighteenth year of Josiah (620 B.C.) by the High Priest Hilkiah. (See JOSIAH.) But while critics are now unanimous in dating the beginning of Deuteronomy from this period, it does not follow that the book, as we have it, was composed in the days of Josiah. In the first place, the law book brought to the King could not have been as extensive as the present book of Deuteronomy. The two poems are clearly additions, and the same may be said of the short prophetic discourse in chaps. xxix-xxxii, and of the blessings and curses, chap. xxvii. There remain the two speeches, (1) chaps. v-xxvi, to which chap. iv. 45-49 forms the introduction, and (2) chaps. i-iv. Since the former discourse contains no reference to the latter, the two are independent of one another; other evidence can also be brought forward. Between the two the choice is not difficult. Since Hilkiah speaks of a "book," a document of some bulk is evidently intended, and the references to specific laws in the narrative of 2 Kings confirm the view adopted by most critics that chaps. v-xxvi represent the law book of Hilkiah, which may have been composed in the earlier years of Josiah's reign or possibly under Manasseh or Hezekiah. This discourse may be again divided into two sections: (a) chaps. v-xi;

(b) chaps. xii-xxvi. The former is an historical narrative put into the mouth of Moses; the latter an exposition of the law. The two divisions, however, formed an organic whole, and everything points to a single origin for them. The historical narrative forms the justification, as it were, for the authority claimed for the law. Naturally, even in this original portion of Deuteronomy, insertions and amplifications have been introduced by those who in the course of time enlarged the book by adding to it the other discourses, the blessings and the curses, and the poems: and who inclosed the whole in an historical frame and attached it to the four preceding books. (See EXODUS; LEVITICUS; NUMBERS; PENTATEUCH.) In these codes three distinct strata are recognized: (a) Ex. xxi-xxiii, called the Book of the Covenant; (b) Lev. xvii-xxvi, the Law of Holiness; (c) various priestly regulations found here and there in Exodus, Leviticus, and Numbers. Hence a question arises as to the position to be accorded to the original Deuteronomic code. As a result of the investigations of modern scholars—notably Kuenen, Graf, Wellhausen, and Stade—it may now be regarded as definitely established: (1) that Deuteronomy is older than (b) and (c), but younger than (a); and (2) that the Deuteronomic code is based upon the Book of the Covenant, enlarged and adapted to new conditions and introducing as an entirely new feature the recognition of Jerusalem as the only legitimate centre of Yahwe worship. Everything points to Jerusalem as the place where the original Deuteronomy was written, and there is nothing strange in the supposition that, as a result of prophetic agitation for the purification of Yahwe worship, an attempt should have been made, particularly after the profound impression made in Judaea by the catastrophe to the northern kingdom, to formulate an ideal code which should carry out the views of the Yahwe purists, and since the prophets pointed to the days of the wanderings in the wilderness as the period when the people showed the greatest fidelity to Yahwe, it was also natural that the tradition should arise and gather strength which ascribed the Deuteronomic code, as subsequently the other codes, to the great leader of the past, Moses. It is this tradition which, shaping the subsequent history of Israel, gave to the codes their authority in the eyes of the people. How long after this the second discourse (chaps. i-iv) was added has not yet been ascertained by the investigations of scholars, though it probably dates from the exilic period. The same may be said of chap. xxix, while chap. xxxiii appears originally to have been the conclusion to the enlarged book. Chap. xxxvii is an independent composition, which again impresses one as the natural conclusion of a book, and is therefore a "doublet" to chap. xxviii. It may be admitted that the problems involved in the relationship of these two chapters (xxvii-xxviii) to the rest of the book have not yet been satisfactorily solved, and further investigations are needed. Of the poetic supplements, (a) the Song of Moses and (b) the Blessing of Moses, the former is now regarded as an exilic or even postexilic composition, while the latter is considerably older and reflects political conditions as they existed in the days of Jeroboam II (782-743 B.C.), before the disappearance of the northern kingdom.

Bibliography. Consult, besides the commentaries of Dillmann, Driver, Keil, Oettli, Montet, Steuernagel, etc., Stark, *Das Deuteronomium* (1894); Steuernagel, *Der Rahmen des Deuteronomiums* (1894); Addis, *Documents of the Hexateuch*, vol. ii (1898); A Harper, *Book of Deuteronomy* (1900); Stade, *Biblische Theologie des Alten Testaments* (1905); Boetticher, *Das Verhältnis des Deuteronomiums zu 2 Kön. 22-23 und zur Prophetie Jeremias* (1906); Klostermann, *Der Pentateuch II* (1907); Cornill, *Einleitung in das Alte Testament* (1907); Puukko, *Das Deuteronomium* (1910); Driver, *Introduction to the Old Testament* (1910); Sellin, *Einleitung in das Alte Testament* (1911); Jordan, *Commentary on the Book of Deuteronomy* (1911).

DEUTSCH, doich, EMANUEL OSCAR (1829-73). A distinguished Semitic scholar. He was born of Jewish parents, at Neisse, in Silesia. His education was begun by an uncle, to whose inspiration he owed his interest in Oriental languages and literature, and was finished at the University of Berlin. In 1855 he was called to England to fill an appointment in the library of the British Museum and labored there until his death in 1873. He acquired an extraordinary mastery of the whole range of Hebrew, Aramaic, and Rabbinical literature, and is best known for his articles on the Talmud and Islam in the *Quarterly Review*. He also wrote excellent articles on the Targum and the Samaritan Pentateuch for Smith's *Dictionary of the Bible*. The monument of his official work in the British Museum is to be found in the *Phœnician Inscriptions*, edited by Mr. Vaux, to whom Deutsch rendered most valuable assistance. His engrossing public duties and comparatively short life prevented Deutsch from fulfilling the dream of his life, an elaborate work on the Talmud. Consult his *Literary Remains*, containing reprints of his most important articles, with memoir (London and New York, 1874). The essay on the Talmud has also been reprinted by the American Jewish Publication Society, *Special Series No. 3* (Philadelphia, 1897).

DEUTSCH, LEO GRIGOREVITCH (1855-). A Russian revolutionist. He was born at Kiev, where, too, he received his education. In 1874 he joined the Russian revolutionary movement and two years later was arrested, ostensibly for deserting the army (in which he served as a volunteer), but really for his revolutionary sympathies. He escaped, however, while awaiting trial by court-martial. In 1877 he, together with another famous revolutionist, undertook to organize a revolt among the peasantry in the Government of Kiev. When this secret organization was discovered, Deutsch was again arrested, this time for a real political offense punishable with death; a year afterward, however, while still lingering in the Kiev prison pending trial, he again made his escape. Going to Switzerland, he joined a group of Russian terrorists known as the Land and Liberty party, became a Socialist, and in 1883 helped to found the Russian Social-Democratic party in Switzerland. A year later, while conveying literature of this new organization, he was accidentally arrested in Germany and, through the influence of Prince Bismarck, extradited to Russia. He was sent to Siberia for 13 years and 4 months, but once more outwitted his guards in 1901 and again fled, by way of

Japan and America, to Switzerland. There he rejoined the Socialist party and became connected with its leading organ, the *Spark*. In 1905, much encouraged by the Czar's manifesto promising Russia a constitution, Deutsch returned to his fatherland. The reaction that came in 1906, however, again made him a political prisoner. On the way to Siberia, whither he was being exiled, Deutsch eluded his convoy and fled to France. In 1911 he came to the United States and for a year edited the newly founded Russian Socialist weekly, *Novy Mir*. An interesting account of his 40 years of revolutionary activity, including his prison life and thrilling escapes will be found in his *Sixteen Years in Siberia* (New York, 1903) and *Verma! Entlohen* (Stuttgart, 1907).

DEUTSCHEROD, doich'brôt. The capital of a district in Bohemia, Austria, on the Sazawa, 10 miles north of Iglau (Map: Hungary, D 2). It has woolen factories, lumber and grist mills, glassworks, and breweries. The chief event in its history is the defeat of the Emperor Sigismund by Ziska in 1422, and the destruction of the town by the Hussites. Pop., 1900, 6526.

DEUTZ, doits. See COLOGNE.

DEUTZIA, dut'si-a or doits'i-â (after the Dutch botanist Deutz). A genus of shrubs of the family Saxifragaceæ, natives of the north of India, China, and Japan. They produce an abundance of beautiful white flowers. The leaves of *Deutzia scabra* are so rough with siliceous hairs that they are used by joiners in Japan for polishing wood. *Deutzia scabra* and *Deutzia gracilis*, of which there are numerous varieties, including some with rose-colored flowers, are common ornamental shrubs in the United States. Other species are often used for forcing in greenhouses.

DEUX-PONTS, dè'pôn'. See ZWEIBRÜCKEN.

DEUX-SÈVRES. See SÈVRES.

DĒV, dāv, less accurately **DĒW**, or **DĪV**. The Persian word for demon, identical with Avestan *daēva*, and the same as Sanskrit *dīva*, Avestan *daēva*, although the latter means "god," not "demon." According to Zoroaster the *Daēvas* were created by Ahriman (q.v.), and in Firdausi's Persian epic, *Shāh Nāmāh*, the *Dēvs* are a constant source of guile, cunning, evil, and alarm. The difference in meaning between the usage of the word in Iran and India has been much discussed. Consult Geiger and Kuhn, *Grundriss der iranischen Philologie*, vol. ii (Strassburg, 1896-1904). See AVESTA; ZOROASTER.

DĒVA. The old Roman name for Chester and the river Dee.

DEVA-DĀSĪ. See BAYADERE.

DĒVANĀGARĪ, dā'vā-nā'gā-rē, or **NĀGARĪ**. The name given to the character in which Sanskrit is generally written, especially in northern and middle India. The Hindus commonly employ the second term rather than the first. The word *nāgarī* means "of the city, urban" (writing); *dēvanāgarī* signifies "([writing] of the divine city." As the Arab chronographer Al-Birūnī in his account of India (about 1030 A.D., trans. Sachau, i, 173) mentions a kind of writing called *Nāgarā* as in use in Mālwa, whose chief city is Ujjain, it has been thought that the name of this script, *urban, urbane*, may possibly have some connection with King Vikrama's capital, which was a famous seat of learning and literature. The Nāgarī alphabet

consists of 48 letters, and it is written from left to right. It is believed to have assumed its present characteristic form about the eighth century A.D., and, like the other Hindu scripts, it is traceable back to the oldest form of Indian alphabet, the *Brahmi līpi*, or Writing of Brahma, which is known from coins and inscriptions of about 350 B.C. The Brahmi itself is held to be an adaptation of a form of Semitic writing that may perhaps have found its way into India as far back as the eighth century B.C. In modern times one of the earliest instances of Dēvanāgarī letters being employed in a printed European book is found in five tables contributed to Kircher's *China illustrata* (Amsterdam, 1667) by Heinrich Roth, a German who had lived a number of years in India as a missionary. On the Nāgarī script and its paleographic sources, consult the standard work of Bühler, *Indische Paläographie* (Strassburg, 1896), and Taylor, *The Alphabet*, vol. ii (London, 1899), who is the exponent of a view differing from that of Bühler. See ALPHABET, SANSKRIT.

DEVAPRAYAGA. See DEOPRAYAG.

DEVAUX, de-vô', PAUL LOUIS ISIDOR (1801-80). A Belgian statesman. He was born at Bruges and was educated at Liège. The establishment of the so-called "Doctrinal party" after the revolution of 1830 was largely due to his efforts and to those of his chief associates, Rogier and Lebeau, with whom he had six years previously founded the *Journal Politique*. This publication, by unifying the Liberal and Catholic elements, agitated the opposition to King William I of the Netherlands and eventually became largely instrumental in promoting the separation from Holland and the establishment of an independent government. Devaux assisted in framing the constitution and in the negotiation of the Treaty of London. In 1831 he became Minister of State, resigning upon the installation of King Leopold, whose election he had advocated. He later became the head of the Moderate Liberals in the Chamber, and for many years conducted the official organ of that party, the *Revue Nationale*, founded by him in 1840. Towards the close of his career he was stricken with blindness. His publications include: *Mémoires sur les guerres médiévales* (1874), and *Etudes politiques sur les principaux événements de l'histoire romaine* (1880).

DĒVAY, dā'voi, or **DĒVAI** (i.e., of *Dēva*), MÁTYÁS BIRÓ (c 1500-74). The founder of the Reformed church of Hungary. He was born at Déva, Transylvania, studied theology at Cracow, became a priest, but in 1529 embraced the Reformation, and spent nearly two years with Luther at Wittenberg. On his return home he preached the new faith boldly and at the risk of his life until, in 1534, he came under the protection of a powerful noble. In 1541 he fled to Switzerland to escape the oncoming Turks and there imbibed Zwingleian views of the sacraments, much to Luther's sorrow. He died at Debreczin, Hungary, where he had faithfully labored for a few years.

DEVELOPMENT, EMBRYONIC. See EMBRYOLOGY; GASTRÆA THEORY.

DEVELOPMENT, EVOLUTIONARY. See EVOLUTION.

DEVELOPMENT IN PHOTOGRAPHY. See PHOTOGRAPHY.

DEVELOPMENT OF DOCTRINE. The process by which Christian doctrine has been

slowly and successively divided into different departments of thought, these one after another more carefully defined, subdivided, and elaborated, and more thoroughly grounded in revelation and reason, and the whole thereby reduced to a systematic and relatively complete form.

The fact of such a development is at once evident upon the most superficial examination of Christian history. The earliest writers of the Church possess no system of theology and employ few expressions which indicate any thought upon the great questions with which theology is engaged. The development has proceeded with unequal pace; now one subject and now another being the centre of attention. In a sense it is true that heresies have determined the development of doctrine: for a heresy must be met by a more careful study and restatement of the doctrine attacked. Such a study is seldom without modifying influence upon the form in which the doctrine is held.

In the second century Gnosticism (q.v.) came into Christianity and compelled the formation of the New Testament canon and the statement of the relation of Christianity to Judaism. The fourth century brought a discussion of the relation of Christ to God, resulting in the formation of the Nicene Creed. The fifth century brought the completion of Christology (q.v.) by the definition of the relation of the divine nature of Christ to his human nature, culminating in the Creed of Chalcedon (451). Augustine formulated the doctrines of grace and of original sin, under the influence of the Pelagian controversy; and of the Church, under that of the Novatian controversy. The doctrine of the Church took more definite form in the Middle Ages, when the doctrines of the sacraments were defined. The doctrine of the atonement was first clearly stated by Anselm (1098). The Protestant Reformation caused a twofold development. On the Catholic side it issued in a formulation and statement, in the Creed of the Council of Trent, of the ecclesiastical and sacramental interpretation of Christianity. This statement was so full that Catholic development of doctrine has proceeded more slowly since then, the most prominent points being the definition of the doctrine of the immaculate conception (1854) and of the papal infallibility (1870). The Protestants formulated anew the doctrines of the Church, the priesthood of believers, the sacraments, and justification by faith. Both Luther and Calvin regarded their doctrines, not as new developments, but only as restatements of biblical and Augustinian positions. Calvin emphasized the sovereignty of God. This led to the Arminian protest against any doctrine which destroyed a real free will. This controversy was one of the factors in the development of the New England theology, which gradually modified Calvinism, till little of its old form was left. Modern times have produced, instead of developments of special doctrines, an attitude towards all doctrines which demands (1) that they be made ethical. This has caused changes in the doctrines of everlasting punishment and of the atonement. (2) That they be in accord with present philosophical conceptions, as in the case of the problems of free will. (3) That they be so stated as to possess a practical value for life.

Two theories of development have been held. One is best expressed in English in Newman's

famous *Essay on Development*. It holds that all doctrine was latent in the teaching of Christ and the Apostles, but that it unfolds gradually under the guardianship of a divinely inspired and infallible Church. Protestants have often held a modification of this theory, regarding all true Christian doctrine as lying in the New Testament, but denying the infallibility of the Church. The other theory holds that doctrine has developed under natural influences, and that the results may be at some points quite out of accord with the spirit of the gospel. Consult: Cardinal Newman, *An Essay on the Development of Christian Doctrine* (London, 1878), and criticism by Prof. F. H. Foster in his *Christian Life and Theology* (New York, 1901); Brown, *The Essence of Christianity* (ib., 1902); Allen, *The Continuity of Christian Thought* (Boston, 1884). See CREEDS AND CONFESSIONS.

DEV'ENS, CHARLES (1820-91). An American jurist and statesman. He was born in Charlestown, Mass., graduated at Harvard in 1838, and was admitted to the bar in 1841. He was a member of the State Senate in 1848-49, and from 1849 to 1853 was United States Marshal for the District of Massachusetts. In this capacity he was called upon in 1857 to remand Thomas Sims (q.v.) to slavery and strongly against his own inclination caused the process to be executed, but subsequently made every effort to secure Sims's freedom. He served with the Union army in the Civil War from 1861 to 1866, rose from the rank of major to that of brigadier general, and was brevetted major general. At the conclusion of the war he resumed the practice of law, was associate justice of the Superior and Supreme courts of Massachusetts from 1867 to 1877, and was United States Attorney-General under President Hayes from 1877 to 1881. From that time until his death he was again in the State Supreme Court. He was a brilliant orator and public speaker. In 1886 he presided over the exercises in celebration of the two hundred and fiftieth anniversary of Harvard University. Consult his *Orations and Addresses*, with a memoir by John Codman Ropes (Boston, 1891).

DEVENTER. A thriving town of Holland, situated at the junction of the Schepbeek and Yssel, 66 miles east of Amsterdam (Map: Netherlands, E 2). The town retains the mediæval plan of streets, but is very neat. The principal buildings are the early Gothic church of St. Leuwinus, the Brothers' Church, and the Bergkerk of the twelfth century, the townhouse, the courthouse, and the Gothic weigh-house, now a high school for girls. There are a number of carpet factories and a Royal Smyrna rug factory. Erasmus received his early training at Deventer. The town is also famous throughout the country for its honey cakes, a kind of gingerbread, called "Deventer koek." Other industries are iron molding, cotton spinning, cigar manufactures, rope making, and glue making. There is also a large trade in grain, linen, and animal products. Pop., 1900, 26,212; 1910, 28,223. Deventer is mentioned as early as the eighth century, when it was taken by the Saxons. It was the seat of a bishopric from 1559 to 1591.

DE VEE, *de ver'*, SIR AUBREY (1788-1846). An Irish poet. He was the son of Sir Vere Hunt of Curragh Chase, Limerick, Ireland. In 1832 he took the name of De Vere. He

studied under a tutor at Ambleside and subsequently at Harrow. His sonnets were greatly admired by Wordsworth. He also wrote three dramatic pieces: *Julian the Apostate* (1822); *The Duke of Mercia* (1823); and *Mary Tudor* (posthumous, 1847). Consult *Sonnets* (1875) and *Mary Tudor* (1884), edited by his son, Aubrey Thomas de Vere (q.v.). Consult also Gunning, *Aubrey De Vere* (Limerick, 1902), and Ward, *Aubrey De Vere* (New York, 1904).

DE VERE, AUBREY THOMAS (1814-1902). An Irish poet, son of Sir Aubrey De Vere, and second Baronet of Curragh Chase, Limerick. Educated at Trinity College, Dublin, he first appeared as a poet in 1842, with *The Waldenses*. Next year his *Search after Proserpine* made him widely and favorably known as a writer of verse, graceful, refined, and fluent. Among later volumes are: *Poems, Miscellaneous and Sacred* (1853); *The Sisters* (1861); *Irish Odes* (1869); *Legends of Saint Patrick* (1872); *Legends of the Saxon Saints* (1879); *The Foray of Queen Meave and Other Legends of Ireland's Heroic Age* (1882); and *St. Peter's Chains* (1888), which enriches England's rather slender store of devotional verse of fine quality. De Vere also published poetical dramas on *Alexander the Great* (1874) and *Saint Thomas of Canterbury* (1876), which show no marked dramatic gift; *Essays Chiefly on Poetry* (1887); *Essays Chiefly Literary and Ethical* (1889); and *Recollections* (1897). Many of his best poems, edited by G. E. Woodberry, were published as *Selections* (New York and London, 1894). As a poet, he was inspired by Wordsworth. He was a classical scholar of fine culture, and his appreciation of the Greek spirit is manifest in all his work relating to those ancient myths. Of permanent practical achievement may be mentioned his interest in the Celtic renaissance, and not the least attractive of his poems are those reviving the beauty of Irish legend. Consult: *Recollections* (London, 1897); Brooke and Rolleston, *Treasury of Irish Poetry* (New York, 1900); W. P. Ward, *Aubrey de Vere* (New York and London, 1904).

DE VERE, MAXIMILIAN SCHELE (1820-98). An American philologist. He was born in Sweden, studied in Germany, and in 1842 emigrated to the United States. In 1844 he became professor of languages at the University of Virginia, but during the Civil War entered the Confederate army, and afterward acted as the Commissioner of the Confederacy in Germany. At the close of the war he resumed his professorship. He was one of the founders of the American Philological Society and published: *Comparative Philology* (1853); *Stray Leaves from the Book of Nature* (1856); *Wonders of the Deep* (1869); *Ancrionisms* (1872); *Romance of American History* (1872); several translations from Spielhagen; X. B. Saintine's *Myths of the Rhine* (1874).

DEVEREUX, dé'ver-əs, PENLOPE. See STELLA; also, DARK LADY, THE.

DEVEREUX, ROBERT. See ESSEX, third EARL OF.

DEVI, dā've (Skt., goddess), or **MAHADEVI, mā'hā-dā've**. In Hindu mythology, the wife of Shiva, also called Durga and Parvati.

DEVIATION (Lat. *deviatio*, from *deviare*, to go out of the way, from *de*, off + *via*, way). The deflection of the compass needle, due to local attraction, such as the magnetic forces of

an iron or steel ship. It consists of two parts—that produced by permanent magnetism of parts of the vessel's structure and that produced by induced magnetism in other parts. The *angle of deviation* is the angle between the magnetic meridian and the compass needle. (See COMPASS; DECLINATION; MAGNETISM, TERRESTRIAL.) The term also may signify a departure from the usual course of a voyage without justifiable cause; if lack of sufficient cause is proved, the insurers are discharged from all further responsibility. It differs from a *change of voyage*, which is planned and decided upon before the sailing of the ship. Permission to touch at, stay at, or trade in any particular place not in the usual course of the voyage must be expressly given in the contract. Deviation is justified by the following causes: (a) stress of weather; (b) urgent need of repairs; (c) to join convoy; (d) to succor ships in distress; (e) to avoid capture or detention; (f) sickness; (g) mutiny of the crew.

DEVIATION OF THE PLUMB LINE. See DEFLECTION OF THE PLUMB LINE.

DEVICE' (ME. *devise*; OF. *devise*, will, intention, *devis*, division, plan, will, from Lat. *divisus*, p.p. of *dividere*, to divide). An emblem which, with its accompanying motto or legend, was assumed as an ingenious expression, generally containing a hidden meaning of some particular conceit of the wearer. Devices became general in the fourteenth century and reached their full development during the period of the French wars in Italy. Mary Stuart solaced her captivity by inventing devices which she afterward executed in embroidery. A device was composed of two parts—the body and soul, as they were called by the Italians. The body, or painted metaphor, was not to represent the human form, but was to be pleasing in appearance. The soul was to be short and in a foreign language. The combined emblem was not to be so plain as to be understood by all, nor so obscure as to require a sphinx to interpret it. Devices were borne only by the person who assumed them, and not, like the crest or cognizance, by his family or descendants. Thus, Louis XIII of France had a falcon as a device, with the words *Aquila generosior ales* (a nobler bird than the eagle), by which he implied a claim of superiority to the Emperor; Louis XIV had the sun in its splendor, with the motto *Nec pluribus impar*. Consult Radowitz, *Die Devisen und Mottos des spätern Mittelalters* (Stuttgart, 1850).

DE VIGNY, de vē'nyé', ALFRED, COMTE. See VIGNY, ALFRED, COMTE DE.

DEVIL, or SATAN (OE. *drōfol*, Lat. *diabolus*, Gk. *diábolos*, *diabolos*, slanderer, from *diá*, *dia*, across + *bállōw*, *ballein*, to throw; Heb. *Sātān*, adversary, from *satan*, to persecute). In later Jewish and Christian belief, a mighty spirit of evil who has during unknown ages ruled over a kingdom of evil spirits and is in constant and restlessly active opposition to God. This belief, however, was very gradually developed in the Jewish mind; and it is beyond all question that it acquired clearness and prominence through extranational influences. The older Hebrews who lived before the period of the Babylonish captivity—judging from the silence of Scripture—knew nothing, and certainly taught nothing, of evil spirits in the later sense—i.e., of beings separated from God, who were evil in the essence of their nature and worked

evil only. Moral evil was rather looked upon as properly the act of man; physical evil, or adversity, on the other hand, as punishment merited through sin and inflicted by a just and holy God, who was thus necessarily conceived as the true source of all calamity. The angels who foretold God's purposes and executed His will, however great might be the physical evil they occasioned, are never accused of moral evil. The spirit from God which brought insanity upon Saul (1 Sam. xvi. 14) was called "evil" because of its effect, not its moral nature. It is probable that the Hebrews conceived of spirits like the Arabic *jinn* haunting lonely places, but there is little demonology till the period of the exile, when they came into contact with the vigorous demonism of Babylonian and Persia. Then appears for the first time an angel called *Satan*, who, however, still figures as a minister of God and, along with the others, appears in heaven before the throne of Jehovah, but with the function assigned to him of accuser and seducer. It is he who (1 Chron. xxi. 1) stirs up David to number the people; while in the older Hebrew version (2 Sam. xxiv. 1) the same act is attributed to an angry God. Satan also throws suspicion on the piety of Job and, with the permission of Jehovah, causes a series of misfortunes to befall him (Job i. 2); while in Zach. iii. 1 he is represented as "resisting" the angel of God and as a false accuser of the high priest Joshua. As yet, however, an evil nature is not expressly ascribed to him, although it is assumed that he takes a pleasure in evil. It is a purely arbitrary and untextual interpretation of Isaiah xiv. 12 ("How art thou fallen from Heaven, O Lucifer, son of the morning!") that would force these words to refer to the fall of the Devil or determine from them his name. In the Apocrypha, of which only a small part is Palestinian, the rest being either *Chaldaeo-Persian* (as, e.g., Tobias and Baruch) or *Egypto-Alexandrian* (as, e.g., Wisdom) in its origin, the older Hebrew doctrine of misfortune coming from the angel of Jehovah disappears, and demons or evil spirits, in the New Testament sense of the term, are for the first time mentioned (and in Tobias and Baruch frequently) as the authors of calamities. According to the representations of these writings, the evil spirits dwell in waste places, but associate themselves for the injury or destruction of men, enter into them as tormentors, and can be expelled only by magical or mysterious means. To this class of beings the heathen deities were reckoned to belong. But even here there is no mention of an organization or kingdom or prince of demons. The first trace of a *Diabolos* or Devil proper (and one in all probability springing from a foreign source) shows itself in the Book of Wisdom (ii. 24), in relation to the seduction of Eve, where it is said that through the Devil the necessity of death has come into the world.

During the period immediately preceding the appearance of Jesus the Jewish ideas of angels, as well as of demons and the Devil, received an extensive development. Much of this angelology and demonology, wholly foreign to the older Hebrew religion, was derived from Persian Zoroastrianism. The idea of spiritual hierarchies and orders, and the names of specific spirits and demons, as *Asmodeus* in Tobias, are drawn from the Persian system. In Persia the

evil power was supposed to have existed from the beginning, but to be destined to defeat at last. The Hebrew represented the Devil and his demons as having been originally *angels*, who had fallen from their "high estate," been punished by God, and had therefore assumed a position of hostility, without, however, being able materially to frustrate the divine purposes. These opinions found an almost universal reception among the people. Indeed, the only Jewish sect which rejected them was that of the Sadducees, who considered them, as also the doctrines of the resurrection from the dead, of the Messiah, of the Messianic kingdom, of the last judgment, of rewards and punishments, and of angels and demons, to be new, outlandish anti-Mosaic myths and theories. This conflict of opinion among the Jews prevented their ideas of the Devil and demons from obtaining, in spite of their broad diffusion, a dogmatic and systematic stability. The populace and the Pharisees believed fervidly in the existence of such evil spirits; but their conceptions had not only all the heat, but all the confusedness of superstition.

The New Testament contains distinct recognition of the prevalence of this extended popular demonology, by which, in particular, various diseases were ascribed to the agency of the evil spirits. (See DEMONIAE.) The chief demonic power bears a great variety of names, as *Satan* (Matt. iv. 10 et seq.), the Devil (as Heb. ii. 14), the Adversary (1 Pet. v. 8), the Enemy (Matt. xiii. 39), the Adversary (1 Tim. v. 14), the Accuser of the Brethren (Rev. xii. 10), the Old Serpent (Rev. xx. 2), the Great Dragon (Rev. xii. 9), frequently *Beelzebub* (Matt. x. 25), once *Belial* (2 Cor. vi. 15). These names describe well the character imputed to him. He is the "evil one," the "tempter," who opposes Jesus and seeks to draw the disciples as well as their Saviour into sin, has power over the world, of which he is the "Prince" and "God," and shows his power in the moral corruption of heathenism.

The primitive Church assumed the personality of the Devil as an unquestionable fact. The New Testament ideas on this point were not only greatly enlarged, but in many respects entirely changed, partly through the introduction of a considerable number of heathen notions, and partly through the dogmatic tendencies of the time, in consequence of which the various statements in the Bible regarding Satan and evil were uncritically and unhistorically heaped together, and a doctrine of satanic agency elaborated logically. Holding firmly to the belief of a satanic kingdom of darkness opposed to Christ's kingdom of light, the majority of the early Christians ascribed all evil, physical as well as moral, to the Devil and his demons: failures of the crop, sterility, pestilence, murrain among cattle, mental maladies, persecutions of the Christians, individual vices, heresies, astrology, philosophy, and especially the whole body of heathenism, with its mythology and religious worship. The heathen gods were believed to be conquered by the work of Christ, but not to be wholly powerless; they sank down into demons, and so a part of their mythology passed into the doctrine of the Devil. It was they who, as demons, meaning to deceive, uttered oracles, were present at sacrifices, and inhaled the sacrificial incense. The doctrine of the lordship of the Devil over the human race, so

far as it was unregenerate, gave rise to the custom of exorcising, not only those in whom special signs of demoniacal possession appeared (see *EXORCISMS*), but all candidates for baptism, whether infants or adults. (See *EXORCISM*.) But while the power of the Devil over all not guarded by Christian faith and rites was supreme, over those who were so protected it was utterly weak. No Christian, even the weakest, could be forced to do evil; and the sign of the cross, the commemoration of Satan's defeat in the decisive combat, sufficed to put him to flight. During the Middle Ages theologians speculated as to the reason for the fall of Satan. Some held that he was originally the highest of all angels; others, that he was a prince in one of the lower orders. Pride was usually assigned as the reason for the revolt which led to his fall. The general theological speculations on the subject are expressed in Milton's *Paradise Lost*.

The old German and Norse mythologies poured a flood of heathen fancies into the "doctrine of the Devil." Even Ulfilas, at a much earlier period, had translated the New Testament word *damon* or *daemonion* by *unhults*, i.e., she devil or sorceress, because the old Germans believed in female demons, while the Christian *usus loquendi* contains no trace of such. The peculiarly German conception of a now malignant, now gentle female lives to this day in the German phrase, "The Devil is beating his mother" (when rain and sunshine quickly alternate). In England and Scotland, too, the phrase is or was recently current, "The Devil and his dam." The Germans have also the proverb, "Where the Devil cannot come, there he sends his grandmother." Soon, however, the word *diabolus*, in violation of the New Testament distinction between it and *damon*, came to signify devils of every or any sort. The dwelling of the Devil was hell, which, however, according to old Germanic and Scandinavian notions, was placed in the dreary regions of the north. Although his mischievous powers are to be pretty well controlled till the coming of Antichrist, when he expects to hold carnival, yet, like ancient gods and demons, he occasionally appears on the earth. He then assumes at times a purely human form, but, like Vulcan, who was thrown down from heaven like himself, and the smith, Wieland, of German mythology, he is somewhat lame. He is covered with a gray, green, or red cloak, like the kobolds and dwarfs (see *GIANTS*; *DWARF*), the spirits of the suppressed heathenism; sometimes, also, he appears black and sooty, as befits his dwelling place and his opposition to a pure God. But as the old deities, both classical and German, possessed the power of transformation to a most remarkable degree, the Devil, through his relationship with these, inherited this power when they vanished from the scene. The form he most frequently assumed was that of an animal, approximating in this respect to the German forest spirits and the Greek satyrs and fauns. At one time he shows the foot of a horse or goat with horns and tail; at another he appears as a black horse, a he goat, a hog, a wolf, a hell hound, a raven, a serpent, a worm, a dragon, or a fly. The conception of the power of the Devil was vastly enlarged by the influx of these new fancies. In fact, it rose almost to a new dualism; but on the other hand, also, many mild and

friendly traits of the heathen gods passed over into the popular conception of the Devil and gave to his nature a quite new, humorous, and even merry side. As, after the introduction of Christianity, offerings were still occasionally made to the old gods, the Devil shared in these honors. A horse, a he goat, or a hound was at times sacrificed to him; and to the present day the expression has survived, "To kindle a fire for the Devil"—obviously an allusion to altar flames. Various features of the old Norse gods, especially of Loki and Donar (Thor), the gods of fire and thunder, were also transferred to him. Hence the still current phrases in Germany when thunder is heard: "The Devil must be striking," and "The runaway goose is gone to the Devil." (*Donner*, 'thunder,' is the word used for devil in this case.) Every power, too, which, according to the older heathen belief, was lodged in the lesser demons, giants, etc., had now its proper centre in the great fiend himself, who could perform all the pranks attributed to the more grotesque creations of the Norse mythology, and work all the evil of the more malignant spirits; but, in general, these beings were rather pressed into his service than absorbed by him or incarnated in his person.

Thus decked out in the costumes of many different climes and ages, the image of evil passed into the light of the modern world. In this light the Devil began to fade away. Men first lost faith in his occasional incarnation; then medical science destroyed his claims to the origination of mental phenomena, which he was once supposed to have caused directly; natural science deprived him of his control over the elements; historical criticism plucked from him his borrowed feathers; while philosophy and a study of the New Testament in its historical background have combined to annihilate his personality. The tendency has been to regard the personal Devil as a part of the mythology with which men in early times were wont to clothe the forces of the world in personal form. Consult: Mayer, *Historia Diaboli* (Tübingen, 1780); Horst, *Damonologie* (Frankfort, 1818); id., *Zauberbibliothek* (Mainz, 1821-26); Grimm, *Deutsche Mythologie* (4th ed., Berlin, 1875-78); Conway, *Demonology and Devil Lore* (London, 1878); Lecanu, *Histoire de Satan, sa chute, son culte, ses manifestations, ses œuvres* (Paris, 1861); Carus, *History of the Devil* (Chicago, 1900); and see *DEMONOLOGY*; *WITCHCRAFT*; *ANGEL*; *ETC.*

DEVIL, TASMANIAN, or DEVIL-DEVIL. See *DASYURE*.

DEVIL, THE. Once a tavern near Temple Bar, in Fleet Street, London, the former place of meeting of the Apollo Club (q.v.). Child's Bank now stands on its site.

DEVILFISH. A name applied to various large marine creatures of terrifying or grotesque appearance. 1. Any of various large cephalopods. See *KRAKEN*; *OCTOPUS*; *SQUILL*. 2. The gigantic ray (*Monta birostris* or *vampyrus*). See *RAY*. 3. The angler (*Lophius*), and its relatives. See *ANGLER*.

DEVIL-IN-THE-BUSH. See *NEGELLA*.

DEVIL IS AN ASS, THE. A comedy by Jonson (1616), the avowed object of which was to substantiate the thesis laid down by the title.

DEVILLE, de-vel'. See SAINTE-CLAIRE DEVILLE.

DEVILLE, JEAN ACHILLE (1789-1875). A

French scholar and antiquarian, born in Paris. He became director of the museum in Rouen. He wrote works on local history and archaeology, such as an *Histoire du Château-Gaillard* (1829); *Tombeaux de la cathédrale de Rouen* (1838); *Essai sur l'exil d'Osive* (1859); *Histoire de l'art de la verrerie dans l'antiquité* (1874)—the last-named volume, finely embellished with numerous plates, being his best.

DE VILLIERS, de vil'yärz, JOHN A. J. (1863-). An Anglo-Dutch geographer, born in London, the son of a Hollander living in Cape Colony. He was educated at the City of London College, became superintendent of the map room in the British Museum, and was expert adviser to the British Foreign Office in the Venezuelan and Brazilian boundary arbitration cases. In 1911 he lectured throughout Holland. He published some translations from the French, notably Bourget's *Mensonges*, and edited for the Hakluyt Society—of which he was honorary secretary—early works on British Guiana, etc.

DEVIL OF EDMONTON, THE. See MERRY DEVIL OF EDMONTON, THE.

DEVIL'S ADVOCATE. See ADVOCATUS DIABOLI.

DEVIL'S-APRON. The large brown alga, usually called kelps, in the order Laminariales. See *PHLEOPHYCEÆ. ALGÆ*.

DEVIL'S BIBLE, THE. The name given to a manuscript Bible taken to Stockholm after the Thirty Years' War. It is beautifully written on 300 asses' skins, and the legend makes it the work of a monk condemned to death, who by selling himself to Satan was enabled to save his life by meeting the condition that he should copy the whole Bible on asses' skins in one night.

DEVIL'S-BIT. See SCABIOUS.

DEVIL'S BRIDGE (translation of Ger. *Teufelsbrücke*). A curious bridge formerly in the Canton of Uri, Switzerland, over which the St. Gothard Railway crosses the Reuss at a point where there are often violent gusts of wind (Map: Switzerland, C 2). Built in the Middle Ages, it was partially destroyed by the French in 1799, in which year it was the scene of fierce conflicts between them and the allied Austrians and Russians. The remains of the bridge were carried away by a flood in 1888. "The Hole of Uri" is the name given to the tunnel near by, through which the road passes. The new bridge was built close to the old site in 1830, and a monument to the Russian general, Suvaroff, was erected in 1899 in a niche above.

DEVIL'S-CLAW. A heavy split hook attached to a chain or hawser and used for working the chain cable in mooring, unmooring, clearing hawse, etc. The points of the hook pass on each side of one link and grip the next one at right angles to it. The chain or hawser is secured to a bitt, ringbolt, capstan, windlass, or the like.

DEVIL'S-CLUB. See *ABALIA*.

DEVIL'S-COACHHORSE, or *Cow.* A rove beetle (*Ocypus olens*), common in Great Britain. See *ROVE BEETLE*.

DEVIL'S DARNING NEEDLE. See *DRAGON FLY*.

DEVIL'S DOZEN. See *BAKER'S DOZEN*.

DEVIL'S DYKE. 1. A prehistoric earth-work in Cambridgeshire, England, built as a barrier between the Mercians and the East Anglians. 2. A natural formation near Brighton,

said by a legend to represent the attempt of the Devil to let in the waters in order to inundate the country.

DEVIL'S-FINGER. A British name for (1) a belemnite; (2) a starfish.

DEVIL'S ISLAND. A small barren island off the coast of French Guiana, South America, about 30 miles northwest of Cayenne (Map: Guiana, French, G 2). It became famous through the confinement there of Capt. Alfred Dreyfus (q.v.). Near Devil's Island are the two small French penal islands of Saint-Joseph and Ile Royale, which were formerly known, with Devil's Island, as *Iles du Diable*, but which later received the name *Iles du Salut*.

DEVIL'S LAKE. A city and the county seat of Ramsey Co., N. Dak., 89 miles west by north of Grand Forks, on the Great Northern and the Farmers Grain and Shipping Company's railroads, and on Devil's Lake (Map: North Dakota, F 2). It contains a school for the deaf, a Carnegie library, St. Mary's Academy, General Hospital, and shops of the Great Northern. There are also creameries and grist mills. The city has adopted the commission form of government. Pop., 1900, 1729; 1910, 5157.

DEVIL'S PARLIAMENT. The name given to an English Parliament convened by Henry VI, which met at Coventry in 1459 and unjustly attainted the Duke of York and his adherents of high treason.

DEVIL'S RIDING HORSE. See *PIRATE BCG*.

DEVIL'S THOUGHTS, or **DEVIL'S WALK, THE.** A short doggerel of 14 stanzas written in collaboration by Southey and Coleridge (1799), republished in Coleridge's *Sibylline Leaves* (1817), and in Southey's poems with additional verses referring to Poison.

DEVIL'S WALL. The popular name for the Pfahlgraben, the old Roman wall between England and Scotland, because of its strength.

DEVIL UPON TWO STICKS, THE. An English adaptation by Foote of *Le Sage's Le Diable Boiteux*.

DEVIL WORSHIPERS. Specifically, a sect called Yezidis, living in Asiatic Turkey and Armenia, and claiming several hundred thousand adherents. Their religion is a survival of primitive worship of the evil mysteries, the essential feature of many savage and barbaric beliefs, though the chief object of their devotion is borrowed from the Old Testament, and the Koran. They practice circumcision and baptism.

DEVINE, dé-vin', EDWARD THOMAS (1867-). An American leader in social work, born at Union, Iowa. He graduated in 1887 at Cornell College (Iowa), and from 1894 to 1896 was secretary of the American Society for the Extension of University Teaching. In 1896 he was appointed general secretary of the Charity Organization Society of New York, and in addition he was from 1897 to 1913 editor of *Charities*, later known as *Charities and the Commons*, and, since 1909, as *The Survey*. He was appointed professor of social economy at Columbia University in 1905, was director of the New York School of Philanthropy from 1904 to 1907, had charge of Red Cross relief work after the San Francisco earthquake and fire in 1906, served in the latter year also as president of the National Conference on Charities and Correction, and prominently identified himself with various congresses and organizations aiming to

better social conditions. He wrote: *Economics* (1898); *The Practice of Charity* (1901); *Principles of Relief* (1904); *Efficiency and Relief* (1906); *Misery and its Causes* (1909); *Social Forces* (1909); *The Spirit of Social Work* (1911).

DE VINNE, də vin'né, THEODORE LOW (1828-1914). An American printer, born at Stamford, Conn., and educated in the common schools of the various towns where his father had pastored. He learned the printing trade in a shop at Fishkill, N. Y., and later was employed on the Newburgh (N. Y.) *Gazette*. In 1849 he entered the establishment of Francis Hart in New York City, and was a junior partner in the business from 1857 to 1877. The firm name having been altered in 1883 to Theodore L. De Vinne & Co., he removed in 1886 to a model plant designed by him on Lafayette Place. He began to print the *St. Nicholas Magazine* when it was founded in 1873, and the *Century Magazine* in 1874. He founded the National Typotheta Society, and was elected its president in 1896. A great advocate of what he called "masculine printing,"—good paper, bold, readable types, and simple composition, strongly printed in black ink, De Vinne did much for the improvement of American typography. For years his publications ranked at the head of American presswork, and his firm gained an international reputation. He was the most prolific of writers on printing, publishing besides a great many magazine articles: *The Invention of Printing* (1876); *Historic Printing Types* (1886); *Plain Types* (1890); *The Practice of Typography* (1900); *Correct Composition* (1901); *Title-Pages* (1902); *Modern Methods of Book Composition* (1904); and *Notable Printers of Italy during the Fifteenth Century* (1910). He contributed to the NEW INTERNATIONAL ENCYCLOPEDIA.

DEVINS, dəvinz, JOHN BANCROFT (1856-1911). An American clergyman and editor, born in Brooklyn, N. Y. In 1882 he graduated from New York University, and in 1880-88 he was a member of the staff of the *New York Tribune*. Ordained to the Presbyterian ministry in 1888, he served from that year until 1905 as pastor of churches in New York City. From 1890 to 1911 he was managing editor of the *New York Observer*. He organized the Federation of East Side Workers and the New York Employment Society, wrote several hymns, assisted in preparing the *Life of Dwight L. Moody*, and wrote *The Church and the City Problem* (1905); *An Observer in the Philippines* (1905); *On the Way to Hwai Yuen* (1905); *The Classic Mediterranean* (1910).

DEVISE (same as *device*; OF., Fr. *devise*, from ML. *divisa*, judgment, contrivance, will). Strictly speaking, a testamentary gift of real property. As a verb, the term is frequently, though improperly, employed interchangeably with *bequeath* (properly, to make a legacy, or testamentary gift of personal property), as signifying any disposition of real or personal property by will. The person making the devise is known as the *devisor*, or, more generally, the *testator*; the person to whom the devise is made is called the *devisee*. The power to dispose of one's estate by last will and testament is fully recognized in all systems of law of which we have any record, but the peculiar conditions, due to the feudal system, under which our land law developed created a curious exception to

this general rule in the case of freehold estates in land. While the common law fully recognized the right of testament as applied to personal property of all kinds, including leasehold interests in land, it did not admit the corresponding right of disposing by will of freehold interests.

The invention of the system of uses, whereby lands were conveyed on a passive trust to one man "to the use" and for the benefit of another, opened the door to an evasion of this feudal restriction. The right of the beneficiary of such a trust, called the *cestui que use*, not being a legal estate and so not cognizable by the courts of common law, was protected by the Chancellor as a conscientious claim against the nominal trustee, in whom the bare legal title to the land was vested. The *cestui que use* was thus, by the grace of the Chancellor, permitted to make dispositions of his beneficial interest, as it was termed, which were denied by the common law to the legal tenant of freehold lands, and among them to make deathtob or testamentary dispositions thereof. See TRUST, USE.

This practice of devising the use of lands became so common that, upon the abolition of such equitable interests by the Statute of Uses (27 Hen. VIII, c. 1) in 1525, the demand for a convenient and legalized method of disposing of freehold interests in land by testament became irresistible, and resulted five years later in the passing of the first Statute of Wills (32 Hen. VIII, c. 1). This statute was the origin of devises of lands, as we understand the term, and granted "full and free liberty, power, and authority" to dispose by last will and testament in writing of all lands, tenements, and hereditaments, saving only one-third of all lands held by the tenure of knight's service. This restriction was removed by subsequent legislation, and in 1837 a comprehensive statute, the present Wills Act (7 Wm. IV and 1 Vict., c. 26), was enacted, by which all devises of lands in England have since been regulated.

The earliest American statutes were modeled upon the Statute of 32 Hen VIII, excepting the restriction upon the devising of lands held by knight's service, which, as that tenure never existed on this side of the Atlantic, had no application in this country. Everywhere in the United States freehold interests in lands may now be devised by last will and testament in substantially the same manner as personal property, the matter being regulated by statutes of the several States. See WILL.

Notwithstanding the general assimilation of the process of disposing of lands to that of bequeathing personal property by will, devises retain many of the distinctive characteristics impressed upon them by their origin and early history in chancery. They are subject to peculiar rules of interpretation and they have, under the title of executory devises, contributed a large and important body of doctrine to the law of future estates. See EXECUTORY DEVISE; FUTURE ESTATE; and the authorities referred to under those titles.

DEVIZES, də-vi'zez. A municipal borough and market town of Wiltshire, England, near the Avon and Kennet Canal, 22 miles north-northwest of Salisbury (Map: England, E 5). It has two ancient Norman churches and a spacious corn exchange, the town being an important grain market. There are also manu-

factures of tobacco, snuff, silk and farming tools, the formerly important woollen industry having declined. The town owns its gas and water supply. Pop., 1901, 6532; 1911, 6741. Roman household gods and coins have been found here. The name of the town is apparently derived from its Roman name, *Castrum Divisurum* or *Ad Divisas*. Its first charter was granted by Queen Matilda when the town was called *De Vies*. It grew up back of the castle built by Roger, Bishop of Salisbury, in the time of Henry I, on a promontory bordered by two ravines. This castle, which was repeatedly captured during the wars of Stephen and Matilda, and was demolished by Cromwell in 1645, has almost disappeared.

DEVÖE, dé-vö', **FREDERICK WILLIAM** (1828-1913). An American manufacturer, born in New York City. After working as a clerk in stores for nine years he became a partner in the firm of Reynolds & Devöe (1852-84) and head of F. W. Devöe & Co. (1864-90), and after 1890 he was president of the F. W. Devöe & C. T. Reynolds Co., manufacturers of paint and varnish. He was at various times president of the New York Board of Education, the Board of Commissioners of Greater New York, and the New York Juvenile Asylum.

DEVONIAN SYSTEM. A division of the Paleozoic group of rocks, next above the Silurian and below the Carboniferous; so named from Devon, England, where the strata were early studied and described. The name was suggested by Murchison and Sedgwick to replace that of Old Red Sandstone. It is sometimes called the Age of Fishes on account of the prevalence of these vertebrates in the seas in which the rocks were deposited. The passage of the Silurian into the Devonian is so gradual that the exact boundary between the two systems is rather indefinite. Between the Devonian and the Carboniferous exists a somewhat variable relation; in most parts of North America the two are practically continuous, but in New England and the Acadian provinces a marked unconformity occurs in places, owing to the upturning of the strata at the close of Devonian time. A similar unconformity is represented, also, in parts of Europe. The American section of the Devonian as worked out in the classic New York area is as follows:

Upper	{ Chemung-Catskill (Sandstones and shales)
	{ Portage (Shales and sandstones)
	{ Genesee (Shale)
Middle	{ Tully (Limestone)
	{ Hamilton (Shale)
	{ Marcellus (Shale)
Lower	{ Onondaga (Mainly limestone)
	{ Oriskany (Sandstone)
	{ Helderberg (Mainly limestone)

This classification is now quite generally followed in the United States, although some geologists consider the Helderberg as a part of the Silurian system.

Conditions in Devonian Time. At the opening of the Devonian period the North American continent already existed in its present general shape. Several large embayments and troughs indented the coast or extended deeply into the interior, notably the St. Lawrence sea and the Appalachian trough on the northeast, the Gulf embayment on the south, and the Pacific and Arctic embayments on the west and north, and within their basins mainly the strata accumulated. Oscillations of level increased or

diminished these areas of submergence and sedimentation from time to time. During the first part of the Devonian, deposition in the north-eastern waters seems to have proceeded quietly and slowly, resulting in the accumulation of limestones; with Hamilton time the seas became more turbid so that shales accumulated in great thickness. By that time, also, the Gulf embayment had extended itself to the north through the Mississippi region to the Great Lakes and spread eastward so as to connect with the New York basin. The Pacific and Arctic waters likewise reached far inland, and in the Rocky Mountain and Great Basin regions the Hamilton was a time of limestone formation on a great scale. The Upper Devonian was a period of shale and sandstone accumulation chiefly, with a brief interval of limestone in the early part (Tully) and more or less conglomerate in the closing or Chemung stage. A variation of the regular phase of the Chemung strata is presented by the Catskill formation (q.v.), which consists of shales and sandstones that were deposited in fresh and brackish waters.

Distribution of Individual Formations. The Helderberg strata are mainly confined to the eastern section of the United States, Nova Scotia, New Brunswick, the Appalachian belt, and the lower Mississippi region. They are mostly limestones which have a thickness of from 300 to 400 feet in eastern New York.

The Oriskany sandstone is developed in central New York and extends thence south along the Appalachians through Pennsylvania, Maryland, and Virginia. It also appears in Ohio, Indiana, southern Illinois, and Missouri. At Oriskany, N. Y., it is 30 feet thick, in Illinois 300 feet. Although sandstone is the prevailing rock, there is some limestone in places.

The Onondaga has a rather widespread distribution, extending from New York to the Mississippi River and being found on James Bay far to the north as a probable continuation of the main area. The limestone is largely made up of corals, sometimes in recognizable reefs, of which a famous example exists at the falls of the Ohio, above Louisville. It is from 100 to 200 feet thick in New York, where it contains strata that are partly made up of chert and are known as the Corniferous limestone.

The Marcellus and Hamilton strata are shales and shaly sandstones, but in the central west include considerable limestone. They extend across New York from east to west and attain a thickness of 1500 feet near the centre of the State. They extend along the Appalachians to Tennessee and are found as far west as Iowa and Missouri; they occur also in the valley of the Mackenzie and in Manitoba, where they represent an accumulation in the Arctic basin which may have reached southward into the United States.

Of the Upper Devonian formations the Tully limestone is a thin band represented in central New York. The Genesee consists of black bituminous shale, 150 feet thick in New York and 300 feet in Pennsylvania. The Portage contains much sandstone and is from 1000 to 1400 feet thick in western New York. The Chemung is still more arenaceous and includes local beds of conglomerate, indicative of very shoal waters; it has a thickness of 1500 feet in the vicinity of Cayuga Lake and of several

thousand feet in Pennsylvania, but thins to the south and west. In eastern New York the Chemung rocks are succeeded by 3000 feet of sandstone and red shales which are separately distinguished by the name "Catskill," as they are thought to have been accumulated under fresh-water conditions.

Devonian Life. The life of the Devonian was abundant, but chiefly marine. Sea plants, such as fucoids, continued up from the Silurian, and land plants appeared, including ferns, lycopods, conifers, and equisetæ, many of them being of large size. Some, indeed, are so well preserved that the cellular structure of the wood is observable in their sections. Among the animals great variety abounded. Crinoids of the blastoid or budlike type, also the plumose ones; brachiopods were not lacking, especially the long-winged species; there were also the early forms of ammonites, trilobites, and insects. An important feature is the great abundance of marine vertebrates—fishes, which fairly swarmed in the Devonian seas. They include sharks, cestracanth and hydropont; ganoids, whose modern representative is the gar pike, having the body covered with shining plates of mail, and placoderms, having the body covered with bony plates, such as are worn by the turtle fishes which seem to have linked the ganoids with the sharks. Among the genera were *Cephalaspis* (q.v.), *Pterichthys* (q.v.), *Cocosteus* (q.v.), *Dimichthys* (q.v.). The latter, found in the Ohio Devonian, was at least 18 feet long; another, *Titanichthys*, probably reached 30 feet. Both were covered with heavy plates.

Economic Products. The Devonian rocks are of vast importance economically, for they contain the great stores of petroleum and natural gas obtained in Pennsylvania, New York, West Virginia, and other Appalachian States. The pools of oil and gas are mainly found in the sandstones of the Middle and Upper Devonian. The Hamilton, Portage, Chemung, and Catskill sandstones are the familiar bluestone, much used for flagging stones, while the Helderberg and Onondaga yield lime and cement materials.

Foreign Devonian. In Great Britain the Devonian system includes sandstones, slates, and limestones similar in general character to those appearing in America. The "Old Red Sandstone," a fresh-water phase of the Devonian in Scotland, admirably described by Hugh Miller, is the British equivalent of the Catskill formation. A large area of Devonian rocks is found in northern France, Belgium, and north Germany, also in Russia, China, and Australia.

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DEVONPORT (before 1824 called **PLYMOUTH DOCK**). A municipal borough, maritime and fortified town, and naval arsenal of Devonshire, England, situated on a promontory between Stonehousepool and the Hamoaze or

estuary of the Tamar, 2 miles west-north-west of Plymouth (Map: England, B 6). It stands on high ground, with ramparts defended by batteries. The streets are regularly laid out and well paved, and there are a number of handsome public buildings. The town was incorporated in 1837, although its existence dates from the establishment of a dockyard there in 1689 by William III. It sends two members to Parliament. The town maintains electric-light and power stations, gas and water works, bath houses, a fine park, a technical school, and a public library. It is a very important military and naval station, being the seat of the military and naval government of "The Three Towns," i.e., Devonport, Stonehouse, and Plymouth. The institutions include the Naval Engineering College (1880), the municipal technical schools (1890), the naval barracks, and naval and military hospitals. Its dockyard and naval arsenal are among the most important establishments of this kind in the United Kingdom. The dockyard, together with the Keyham Steam Yard farther up the Hamoaze, with which it communicates by a tunnel, covers an area of about 240 acres, its capacity having been about doubled by the addition in 1907 of 118 acres, including 77 acres of mud flats which formerly flooded at high water. Mount Wise is a fine parade ground and contains the residences of the Lieutenant Governor and the Port Admiral. Devonport has important steamship communications. Pop., 1901, 70,437; 1911, 81,694.

DEVONSHIRE (AS. *Defena scir*, shire of the Defons). A maritime county, in the south-west peninsula of England, between the Bristol and English channels (Map: England, C 6). Its area is 2604.9 square miles, three-fourths being in pasture or arable. The north coast, 60 miles long, is steep and rocky, the chief indentation being Bideford Bay. The south coast, 100 miles long, is also lined with cliffs and is indented by Tor Bay and Plymouth Sound. The general surface is hilly. The conspicuous feature is Dartmoor (q.v.). Devonshire is an important agricultural and dairy county (about three-fourths of the surface is under cultivation) and has considerable mining, manufacturing, and fishing industries. The chief towns are Exeter (the county town), Plymouth, and Barnstaple. Population of ancient or geographic county, 1901, 661,314; 1911, 701,944; of administrative county, 1901, 436,938; 1911, 457,343.

DEVONSHIRE, SPENCER COMPTON CAVENDISH, eighth DUKE OF (1833-1908). An English statesman, long and familiarly known as the Marquis of Hartington. He was the eldest son of William, the seventh Duke, and was born in London, July 23, 1833. He graduated at Trinity College, Cambridge, 1854; was attached to Earl Granville's special mission to Russia, 1856, and entered Parliament as a Liberal, 1857. In 1859 he moved the vote of want of confidence that resulted in the fall of the Derby ministry. He became Lord of the Admiralty and Undersecretary for War in 1863 and was Secretary for War for a brief period in 1866. He held the office of Postmaster-General in Mr. Gladstone's cabinet, 1868-71, resigning in the latter year to become Chief Secretary for Ireland. In 1875 he succeeded Mr. Gladstone as the leader of the Opposition in Parliament, and on the downfall of the Conservative administration, 1880, was sent for by the Queen to form the new cabinet; this task being declined both by him and by Lord Gran-

ville, it finally devolved upon Mr. Gladstone. In the new cabinet Lord Hartington was first Secretary of State for India and then Secretary of State for War (1883-85), during which period occurred Lord Wolseley's memorable expedition to relieve General Gordon (q.v.) at Khartum. Opposed to Mr. Gladstone's Home Rule policy, in 1886 he became the acknowledged leader of the Liberal Unionists (q.v.), and subsequently gave a vigorous support to Lord Salisbury's administration. He became eighth Duke of Devonshire in 1891, and the following year married the Dowager Duchess of Manchester, widow of the seventh Duke. The same year he received the order of the Garter. From 1895 to 1903 he was Lord President of the Council and from 1900 to 1902 President of the new Board of Education. He retired from the ministry in 1903 as a protest against the protectionist views advocated by Mr. Joseph Chamberlain and became president of the Unionist Free Food League. He received the academic honors of the lord rectorship of Glasgow University, 1877, lord rectorship of Edinburgh University, 1879-81, the chancellorship of Cambridge University, 1892, and presidency of Owens College, Manchester, 1900.

DEVONSHIRE CLUB. A Liberal club, founded in 1875, on St. James's Street, London.

DEVONSHIRE HOUSE. The London residence of the dukes of Devonshire, in Piccadilly, near Berkeley Square. It contains fine collections of portraits, gems, and the "Kemble Plays," including the first editions of Shakespeare.

DEVRIENT, de-vryent. See FLORIS, FRANS.

DEVRIENT, de-vryent. GUSTAV EMIL (1803-72). One of a distinguished German family of actors, he and his elder brothers, Karl August (1797-1872) and Philipp Eduard (q.v.), being nephews of Ludwig Devrient (q.v.). Emil Devrient, as he is known, was born Sept. 4, 1803, in Dresden, and began life in a manufacturing business, but, having the family preference for the theatre, made his debut as an actor and singer in Brunswick in 1821, as Raoul in Schiller's *Jungfrau von Orléans*. In 1825, in Leipzig, whither he had come about two years before from Bremen, he married Dorothea Böhler, a popular actress. After playing also in Magdeburg (1828) and Hamburg (1829), he, in 1831, began his connection with the Court Theatre of Dresden, where he spent most of the remainder of his life. He died Aug. 7, 1872. He was an artist of great ability, excelling notably in the use of his voice. When he played Hamlet in London, his performance was considered equal to that of either Kean or Kemble. Among his greatest rôles were Hamlet, Posa, Tasso, and Uriel Acosta.

DEVRIENT, LUDWIG (1784-1832). A celebrated German actor, first of the noted theatrical family of this name. He was born Dec. 15, 1784, in Berlin, the son of a silk merchant, and had begun the commercial career that his father planned for him, when, in 1804, he joined a traveling dramatic company. He made his debut in Gera, as the messenger in Schiller's *Braut von Messina*. The next year he secured an engagement in Dessau, and in 1809 he went to Breslau. In 1815, having made the acquaintance of Iffland (q.v.), he appeared for the first time on the stage in Berlin, as Franz Moor in Schiller's *Räuber*. He won distinction also in the rôles of Talbot, Schewa, Lorenz Kindlein, the Moor in *Fiesco*, and the Shakespearean parts of Shylock,

Lear, Richard III., and Mercutio. His acting was characterized by great originality, and he excelled alike in pathos and humor. His power was due more, it is said, to his natural gifts than to study. His habits of life were dissipated, and his premature death, which occurred in Berlin, Dec. 30, 1832, was hastened by the use of stimulants. Consult Funck, *Aus dem Leben Zweier Schauspieler, Ifflands und Devrients* (Leipzig, 1838).

DEVRIENT, OTTO (1838-94). A German actor and dramatist, son of Philipp Eduard Devrient (q.v.). He was born Oct. 3, 1838, in Berlin, and made his debut on the stage in Karlsruhe in 1856. He had engagements in Stuttgart, Berlin, and Leipzig; then returned to Karlsruhe in 1863 and remained till 1873, after which he was manager successively of theatres in Weimar, Mannheim, and Frankfurt. In 1879 he retired to Jena and there produced his *Luther*, a play written on the occasion of the Luther jubilee in 1883. The next year he became director of the Court Theatre in Oldenburg and in 1889 was called to a similar position in Berlin, from which he retired in 1890. He died June 23, 1894. He is the author of several dramas, among them *Zwei Könige* (1867), *Tiberius Gracchus* (1871), and *Kaiser Rothbar* (1873); and other works, including *Zwei Shakespeare-Vorträge* (1869); and an edition of letters of Iffland and Schröder (1881).

DEVRIENT, PHILIPP EDUARD (1801-77). A German actor and dramatist, brother of Karl August and Gustav Emil Devrient (q.v.). He made his debut as an opera singer in Berlin when 18 years old, but after 1835 devoted himself to the drama and was manager for a time of the Dresden Theatre. From 1852 to 1870 he directed that of Karlsruhe. He wrote a number of dramatic pieces, among them the libretto for the opera *Hans Heiling* (1827), and the plays *Das graue Männlein*, *Die Gunst des Augenblicks* (1833), *Die Verrungen* (1837), and *Treue Liebe* (1841); and also several historical and critical works upon the drama, notably his *Geschichte der deutschen Schauspielkunst* (1848-74).

DE VRIES, de vries, DAVID PIETERZEN. A Dutch colonist. Nothing is known of his early history except that he served for a time as master artilleryman in the Dutch army. He was a member of an association or company which was organized in 1630 for the purpose of settling the tract of land in the present State of Delaware bought from the Dutch West India Company by Samuel Blommaert and Samuel Godyn in the previous year. A small settlement was made early in 1631, on Lewes Creek, just within Cape Henlopen, and the surrounding country was christened Swaanendaal. In a few months, however, the colony was destroyed by the Indians, and De Vries, who had been chosen governor or director, found on his arrival (1632), says Bancroft, "only the ruins of the house and its palisades, half consumed by fire, and here and there the bones of colonists." He left a portion of his party there, while he himself spent some time in Virginia; but concluding that the colony would never be a commercial success, he carried the colonists back to Holland in 1634. He visited Manhattan several times thereafter; attempted to establish a patroonship on Staten Island, where in 1640 his settlement was destroyed by the Indians; and for some time lived on a plantation, Vriessendaal, about 25 miles

north of New Amsterdam, on the site of the present Tappan, N. Y. He published a volume entitled *Korte historaal ende Journaels Aenteykeninge van verscheyden Voyagien in der vier Teelen des Wereldts Ronde* (1655) ('A Short History and Notes of a Journal Kept during Several Voyages in the Four Quarters of the World'), which contains a valuable account of conditions in New Netherland during the administration of Van Twiller and Kieft. The parts of it relating to America have been translated into English and may be found in vols. i and iii, 2d series, of the *Collections of the New York Historical Society*.

DE VRIES, HUGO (1848-). A Dutch botanist, born at Haarlem and educated at Leyden, Heidelberg, and Würzburg, and after 1871 connected with the University of Amsterdam, first as lecturer and then as professor of botany. His great work was done in connection with the development of the theory of mutation (q.v.) as a method of evolution. It is the best-known explanation of organic evolution since Darwin's theory of natural selection. The most important contribution of De Vries to science is probably the changing of the method of studying evolution from observation to experimental work. Among his numerous publications the following are the best known: *Intracellular Pangenesis* (1889); *Die Mutationstheorie* (1901-03); *Plant Breeding* (Chicago, 1907).

DE VRIES, MARION (1865-). An American lawyer and public official, born near Woodbridge, San Joaquin Co., Cal. In 1886 he graduated from San Joaquin Valley College and in 1888 from the Law School of the University of Michigan. He settled in Stockton, Cal., was assistant district attorney of San Joaquin County (1893-97), was admitted to practice before the Supreme Court of the United States in 1897, and from that year until 1900 served as a member of the United States House of Representatives. He was appointed to the Board of United States General Appraisers, New York, in 1900, and of this board was president from 1906 to 1910. In the latter year he received an appointment as associate judge of the United States Court of Customs Appeals.

DEW (AS. *dēaw*, Ger. *Thau*; cf. Skt. *dhav*, *dhaṇ*, to flow). Dew is said to be formed when atmospheric moisture is condensed by cold into drops of water upon grass, trees, rocks, roofs of buildings, or other solid surfaces, while the adjacent air remains clear. The moisture which gathers on the outside of a vessel containing cold water is also termed dew. A thermometer placed in the cold water within this vessel so as to give the temperature of the external surface when that is just cold enough to cause the dew to deposit, indicates the so-called temperature of the dew point, or the temperature to which the free air must be cooled in order to begin depositing dew, and this combination of thermometer and vessel is a *dew-point apparatus*. Many forms of such apparatus have been devised in order to secure accuracy in the use of this method for the measurement of atmospheric moisture and are described in Abbe's *Meteorological Apparatus and Methods* (Washington, 1888). The apparatus usually preferred is that of Regnault, which, with occasional slight modifications, is used in many fundamental determinations of temperature of the dew point. This apparatus consists essentially of a very sensitive thermometer, whose bulb dips into a

thimble of polished gold or silver, while the upper end of the graduated stem protrudes beyond this thimble. If the thimble is filled with ether and a current of air blown through it in order to evaporate the ether, the latter soon cools down to the dew point. When this is reached, a slight deposit of dew is seen on the outside of the polished thimble. At this moment the reading of the thermometer is to be noted, and as the temperature of the ether has probably already fallen below the dew point, one waits a minute until the dew on the polished tube evaporates and disappears, when another reading of the thermometer is made. The mean of these two readings should give the temperature of the dew point. By a skillful manipulation of the apparatus the dew appears and disappears with a scarcely appreciable variation in the reading of the thermometer.

When dew is thus deposited, it indicates that the air from which the moisture comes has been cooled to what is known as the point of saturation and all the vapor associated with the air can no longer remain as vapor. This cooling process takes place naturally every clear night, so that in the course of the early morning not only are the grass and other exposed objects often covered with dew, but the quiet layers of the air near the ground begin to condense their moisture in the shape of fog. The deposition of dew, and especially the formation of fog, retards the cooling of leaves and other objects near the ground and delays the occurrence of freezing temperatures and frosts. The actual quantity of dew accumulating on the leaves and dripping to the ground, so as to become available for the use of the roots of the plants, is in cloudless regions, such as Arizona, California, Syria, and Arabia, so large as to be an important matter in agriculture. Many attempts have been made to devise apparatus for measuring the absolute quantity of dew per unit of area of surface, but these drosometers (q.v.) almost necessarily employ as the collecting surface something different from the natural leaves, grass, and stones, and their measurements are at best not absolutely, but only relatively, representative of the natural phenomenon.

The discovery of the true explanation of the formation of dew is commonly ascribed to Dr. W. C. Wells, of Charleston, S. C., and London, England, who published his *Essay on Dew* in 1814, but is equally due to Muschenbroek, Pelet, Wilson, and others. The air that lies near the surface of the ground receives its moisture to a considerable extent from the soil beneath it, and therefore only a small part of the dew comes from a great distance. The ground is perpetually either absorbing or giving out moisture, and the nearer the bedewed surface is to the ground the more of this fresh moisture it will contain, so that the idea that dew falls from above, whence its Spanish name, *serena*, and its French name, *serén*, is not correct, as was shown by Muschenbroek and Wells and very recently restated by Stockbridge. The formation of dew and fog in the night can only take place when (and therefore indicates that) the sky is sufficiently cloudless to allow of almost uninterrupted radiation of heat. Consequently, when any object is covered by even the slightest screen, no dew is found on it.

If the dew point is below the temperature of freezing, then, instead of dew, we have a formation of frost. When the wind is blowing, dew is

not formed except in damp weather. In dry weather the wind brings a supply of relatively warm, dry air to the cooling surfaces of the leaves and prevents them from cooling to the dew point.

When the air is exceedingly dry, the process of radiation (counteracted, as it always is, in part by the conduction and convection of heat) may not be sufficiently intense or proceed far enough to cool ordinary surfaces down to the dew point: temperatures will, of course, steadily fall during the night, but a stationary temperature may be reached above the dew point that represents the balance between the heat losses by radiation and the gains by conduction from the relatively warmer surrounding air. Moreover, the sun may rise and warm up the ground before the dew-point temperature is passed. This can occur only in dry air, viz., that in which the dew point is very low. Under the most favorable conditions in the dry climate of Arizona the temperature at the surface may thus be lowered in the course of a night by as much as 20, 30, or 40 degrees, when the depression of the dew point below the temperature of the dry air is still greater, so that on such a night no dew is recorded.

The number of degrees by which the dew point is lower than the temperature of the air is known as the *complement of the dew point*. In addition to the dew-point apparatus there are other indirect methods of determining the dew point, which are less exact, but frequently more convenient. The apparatus most commonly used in such cases is the so-called dry and wet bulb thermometer, or psychrometer, which will be found described under *HYGROMETER*.

For many details with regard to dew and cognate phenomena, consult the works of Charles Tomlinson, especially *The Dewdrop and the Mist* (London, 1860), and his historical article in the *Edinburgh New Philosophical Journal*, vol. xiii (Edinburgh, 1861).

DEW, THOMAS RODERICK (1802-46). An American educator and writer. He was born in King and Queen Co., Va., and graduated in 1820 at William and Mary College, where he was professor of history, metaphysics, and political economy from 1827 to 1836 and served as president from 1836 until his death. In 1832 he published a review of the celebrated debate of 1831-32 over slavery in the Virginia Legislature, under the title *An Essay in Favor of Slavery*, which went far towards putting a stop to a movement, then assuming considerable proportions, to proclaim emancipation in Virginia. His most important work is a *Digest of the Laws, Customs, Manners, and Institutions of Ancient and Modern Nations* (1853).

DEWALQUE, de-vâlk', GILLES JOSEPH GUSTAVE (1826-1905). A Belgian geologist, born at Stavelot. He became curator of the mineralogical and geological cabinet at the University of Liège in 1855, and professor there of mineralogy, geology, and paleontology in 1857. In 1870 he was elected president of the Belgian Academy. In addition to a considerable number of contributions to scientific periodicals, he has published a *Description du Lias dans le Luxembourg* (1857), an *Atlas de cristallographie* (1860), *Prodrome d'une description géologique de la Belgique* (2d ed., 1880), and other works.

DEWAR, SIR JAMES (1842-). A British chemist, born at Kincardine-on-Forth, Scotland. He was educated at Edinburgh Univer-

sity and was assistant there to Lord Playfair when he occupied the chair of chemistry. Subsequently he became Jacksonian professor of experimental philosophy at Cambridge and Fulmerian professor of chemistry in the Royal Institution. In 1897 he was elected president of the Chemical Society and in 1902 of the British Association. He received the degrees of LL.D. and D.Sc. from various universities, was chosen to honorary membership in many foreign societies, and in 1904 was knighted. His scientific researches include studies in regard to the physiological action of light and the liquefaction of gases and in particular investigations of low temperatures. By means of the evaporation of liquid hydrogen under a reduced atmospheric pressure he obtained the lowest temperature yet reached (13° absolute; 470° F. of frost). With Sir Frederick Abel (q.v.) he invented cordite, a smokeless gunpowder used by the British government, and he also introduced vacuum flasks (commonly known as thermos flasks) for keeping foods cold or hot for long periods.

DEWART, EDWARD HARTLEY (1828-1903). A Canadian clergyman and author, born in County Cavan, Ireland. In 1834 he was brought to Canada by his parents, who settled in Peterborough Co., Ontario. He was educated mainly at the Normal School, Toronto, and in 1855 was ordained a Wesleyan Methodist minister. After a number of successful pastorates he was elected editor of the *Christian Guardian*, the chief organ of Canadian Methodism, and held that position until 1894. His editorship was forceful and of marked controversial ability. The first step towards the union of the various Methodist denominations in Canada (Wesleyan Methodist, Methodist Episcopal, New Connexion, Bible Christian, and Primitive Methodist) was taken at a private meeting in his house. After union was accomplished in 1883, though not on the basis acceptable to him, he loyally strove to make it a success. He took a foremost part in the federation of Victoria University (Methodist) with the provincial University of Toronto. A Liberal in politics, he did not hesitate to vote accordingly, and excited strong prejudice by his support of a Roman Catholic candidate for Parliament. In 1898 he was an unsuccessful candidate for the Ontario Legislature. Twice he was a delegate to Ecumenical Methodist conferences—once in London in 1881 and once in Washington in 1891. He favored prohibition of the liquor traffic. Though not narrowly orthodox in theology, in the latter part of his editorship he took strong ground against the tenets of the higher criticism. He had a leading share in compiling and editing a new hymn book for the Methodist church. His poetic gift was proved by his *Songs of Life* (1869), a volume of original verse; and he also published a volume of *Selections from the Canadian Poets* (1864). Among his other works are: *Jesus, the Messiah* (1892); *Essays for the Times* (1898); *Outlines of Christian Doctrine* (1899).

DEWBERRY (from *dew* + *berry*, apparently as being a trailing plant), *Rubus canadensis* or *Rubus villosus*. A representative of the blackberry tribe, familiarly known as running brier, and recognized as a common weed of worn-out or neglected fields and waste places. It is also known as the running blackberry. There are several species of *Rubus* which have

a decumbent habit, but the above is the only one which has given a cultural product of merit. The cultivation of this form of blackberry began with the discovery and introduction of the *Lucretia*, a large-fruited and strong-growing form which has given good returns under skillful management. It is usually planted 3 × 6 feet apart, given clean culture, and the vines tied to stakes or provided with a rack or trellis. It propagates readily by layers. Hybrids between the blackberry and dewberry are in cultivation and are not uncommon in nature. See also RUBUS.

DEWDNEY, EDGAR (1835-). A Canadian civil engineer and statesman. He was born in Devonshire, England, and was educated as a civil engineer. In 1859 he went to British Columbia, surveyed the site and laid out the town of New Westminster, and afterward in his professional capacity explored many parts of the province, then little known, at the same time superintending the construction of important public works. He was elected a Conservative member of the Provincial Legislature (1868), was a member of the Dominion House of Commons (1872-79), was Indian Commissioner of the Northwest Territory (1879-81), and Lieutenant Governor of the same (1881-88). In 1888 and 1892 he was again elected to the Dominion Parliament and appointed Minister of the Interior in the cabinet of Sir John A. Macdonald. In 1892-97 he was Lieutenant Governor of British Columbia, after which he resumed business life.

DEWEES, WILLIAM POTTS (1768-1841). An American physician and obstetrician, born at Pottsgrove, Pa. Adjunct professor from 1826, in 1834 he became professor of obstetrics and the diseases of women and children in the University of Pennsylvania, but resigned in the same year. Among his publications are: *System of Midwifery* (1826, 12th ed., 1854); *Treatise on the Physical and Medical Treatment of Children* (1825; 10th ed., 1854); *Treatise on the Diseases of Females* (1826; 10th ed., 1853); *Practice of Medicine* (1830).

DEWES, dūz, SIR SIMONDS (1602-50). An industrious English chronicler and antiquarian. He was the son of Paul D'Ewes, of Milden, Suffolk, one of the six clerks of chancery, and was born at Coxden, Dorsetshire, on Dec. 18, 1602. His preparatory education was gained under several private teachers. Through Henry Reynolds, of St. Mary Axe Parish, London, he became strongly indoctrinated with the Puritan theology, and to John Dickinson, upper master of Bury School, he owed his first enthusiasm for scholarly research. In 1618 he entered St. John's College, Cambridge; but two years later, before taking a degree, he was removed by his father to the Inner Temple, where he was called to the bar in 1623. He abandoned the law three years later, partly in consequence of his marriage with the rich heiress of Sir William Clifton, of Lutons Hall, Suffolk. In the same year he was knighted. He now began to devote himself zealously to those antiquarian studies which he never abandoned, although he represented Sudbury in the Long Parliament and was one of the members expelled by Pride's Purge in 1648. He wrote and collected a vast number of manuscripts and made many transcripts from monastic and other records, and these now form a part of the Harleian collection preserved in the British Museum. His greatest work is the

Journal of All the Parliaments of the Reign of Queen Elizabeth, finished in 1629, but first edited and published by his nephew, Paul Bower (London, 1682). This work was incorporated by Cobbett in his *Parliamentary History*. Consult: Jessopp, in the *Dictionary of National Biography*, vol. xiv (London, 1888), and Halliwell-Phillipps's edition of the *Autobiography and Correspondence of Sir Simonds D'Ewes during the Reign of James I and Charles I* (London, 1845).

DE WET, de vēt', CHRISTIAN RUDOLPH (1854-). A distinguished Boer commander and statesman. He won a name for gallantry in the war between the Transvaal and the British in 1880-81 and became famous for his skill in hunting. In 1897, he was a member of the Orange Free State Volksraad. During the latter stages of the Boer War of 1899-1902 he proved a formidable adversary to the British who for a time made him their principal objective. Frequently he would appear to be completely enmeshed in a girdle of blockhouses, wire entanglements and fences, and pursuing columns, but as often, through the exercise of a clever ruse, completely evaded his pursuers and inflicted damage on some British convoy or outpost in the most unexpected direction. On Feb. 6, 1902, his capture between Lindley and Kroonstad, by the British columns under Lord Kitchener, seemed certain. He was driven into a corner from which escape was rendered difficult by strong wire fences and entanglements; but, to the consternation of his pursuers, he hurled a large drove of cattle, goaded almost to madness, against the wire obstacles, and in the confusion made his escape. In common with other Boer leaders, he made submission to Lord Kitchener and afterward served on a Boer committee to raise funds in Europe and America for the distressed Boer families. During the war he never wore the slightest badge of rank, and he was always taciturn to a degree. He had the complete confidence of his soldiers, but, in common with all the other Boer leaders, suffered the defeat of his best schemes because of the individuality and independence of the burghers under his command. He was regarded by the British government as one of the most influential of the Boer leaders, and great satisfaction was evinced at the dignified manner of his acceptance of the inevitable. He wrote *Three Years' War* (New York, 1902). After 1907 he was a member of the new Parliament of the Orange Free State and also Minister of Agriculture. In the Closer Union Convention of 1908-09 he was a delegate. In 1912 he was appointed to the South African Council of Defense.

DE WETTE, de wēt'te or vē'te, WILHELM MARTIN LEBERECHE (1780-1849). A German theologian. He was born at Ulla, near Weimar, and studied at the University of Jena. In 1807 he was appointed extraordinary professor of philosophy at Heidelberg, in 1809 professor of theology, and in 1810 was called to Berlin. By his excellence as a teacher, as also by his writings, De Wette soon acquired a great reputation. In 1819, on account of a friendly letter which he wrote to the mother of the assassin of Kotzebue, he was deprived of his chair. In 1822 he was appointed professor of theology in the University of Basel, where his prelections and sermons in a short time secured him universal esteem and applause. In 1829 the Grand Council

of Basel made him a member of the Council of Education and granted him the freedom of the city. In 1849 he was elected rector of the university, but died the same year. De Wette was a man of comprehensive learning and acute philosophic discernment. His antipathy to the shackles of dogmatic theology gave keenness and vigor to his criticism. He is one of the forerunners of the modern study of the Bible. A temperate but very decided historical rationalism, on a broad basis of moral reverence, would perhaps best express his biblical standpoint. His principal works are: *Beiträge zur Einleitung in das alte Testament* (1806-07); *Commentar über die Psalmen* (1811); *Lehrbuch der historisch-kritischen Einleitung in die Bibel, alten und neuen Testaments* (1817-26; Eng. trans. of Old Testament part by Theodore Parker, 1843); *Lehrbuch der christlichen Dogmatik* (1813-16); *Christliche Sittenlehre* (Eng. trans. by Samuel Osgood, 1842); *Theodor* (1828; Eng. trans. by James Freeman Clarke, 1849); *Vorlesungen über die Religion, ihr Wesen, und ihre Ercheinungsformen* (1827); *Das Wesen des christlichen Glaubens* (1846); *Exegetisches Handbuch zum neuen Testament* (1836-48). With J. C. W. Augusti he made a German translation of the entire Bible (Heidelberg, 1809-11, 5 parts; 4th ed., 1838, 3 vols.). Besides these, De Wette published a critical edition of the correspondence of Luther (Berlin, 1825-28). For his life, consult A. F. J. Wiegand (Erfurt, 1879). For an estimate of his biblical work, consult Cheyne, *Founders of Old Testament Criticism* (London, 1894).

DEWEY, CHARLES MELVILLE (1849-). An American landscape painter. He was born at Lowville, N. Y. Confined to his bed from his twelfth to his seventeenth year by a hip disease, he formed the poetic conception of nature which appears in his pictures. He studied in the schools of the National Academy of Design, New York (1874-76), and in Paris under Carolus-Duran, whom he assisted to paint a ceiling in the Louvre. In 1878 he returned to New York. Dewey's work is full of a highly individual, poetic sentiment and generally depicts subdued morning and evening effects. His landscapes in oil and water color are in many public galleries and private collections of the United States. Among the best are: "Indian Summer" and "A November Evening" (1904); "Morning Bay of St. Ives" and "The Brook" (1905); "The Edge of the Forest" (Corcoran Gallery, Washington); "The Harvest Moon" and "The Close of Day" (National Gallery, Washington); "The Gray Robe of Twilight" (Buffalo Gallery); and "Old Fields" (Pennsylvania Academy, Philadelphia). He was made a member of the National Academy of Design in 1907.

DEWEY, CHESTER (1784-1867). An American scientist. He was born in Sheffield, Mass., and, graduating from Williams College in 1806, was professor of mathematics and natural philosophy there from 1810 to 1827. From 1850 until 1860 he was professor of chemistry and natural philosophy in the University of Rochester. Dr. Dewey made many contributions to science.

DEWEY, DAVIS RICH (1858-). An American economist and statistician, born at Burlington, Vt., and educated at the University of Vermont and Johns Hopkins University. He became professor of economics and statistics

at the Massachusetts Institute of Technology and secretary of the American Statistical Association, Boston, Mass. He was a member of the commission on public charitable and reformatory institutions in 1897, and of the State board on the question of the unemployed. He was special expert agent on wages for the twelfth United States census (1902), secretary of the American Statistical Association (1886-1906), president of the American Economic Association (1909), and became managing editor of the *American Economic Review* in 1911. He wrote: *Syllabus on Political History since 1815* (1887); *Financial History of the United States* (1902; 4th ed., 1912); *Employers and Wages: Special Report of the Twelfth Census* (1903); *National Problems* (1907). He was a contributor to the first edition of the NEW INTERNATIONAL ENCYCLOPEDIA.

DEWEY, GEORGE (1837-). An American naval officer, born in Montpelier, Vt. He graduated at the United States Naval Academy in 1858 and began active service on the Mediterranean station. In 1862, under Farragut, he was present at the passage of Forts Jackson and St. Philip on the lower Mississippi and in 1864-65 participated in the attack on Fort Fisher. He became lieutenant commander in 1865, commander in 1872, captain in 1884, and commodore in 1896. In 1898, at the outbreak of the war with Spain, he was appointed to the command of the Asiatic station and on May 1 entirely destroyed the Spanish fleet in Manila Bay without the loss of a man in his own fleet. In recognition of this achievement he was immediately appointed rear admiral and was especially honored by Congress. He aided General Merritt in the capture of the city of Manila (Aug. 13, 1898) and subsequently was a member of the Schurman Philippine Commission. His reception in the United States on his return in 1899 was an enthusiastic ovation. The same year he was made admiral of the navy and is the only officer who has ever held that rank, Farragut and Porter having been admirals but not "admirals of the navy." Admiral Dewey has served on the Lighthouse Board, as Chief of the Bureau of Equipment, and as President of the Board of Inspection and Survey. In the months preceding the presidential campaign of 1900 his name was prominently before the country for a time, but his candidacy from a political standpoint was not seriously considered. In 1901 Admiral Dewey served as president of the Schley Court of Inquiry. (See SCHLEY.) He signed the unanimous report delivered by the court to the Secretary of the Navy on December 13, but further submitted a minority report in which he dissented from certain specifications of the principal document.

DEWEY, JOHN (1859-). An American philosopher, psychologist, and educator, born in Burlington, Vt. He graduated in 1879 at the University of Vermont and in 1884 received a Ph.D. from Johns Hopkins. He was professor of philosophy at the universities of Minnesota (1888-89), Michigan (1889-94), and Chicago, where he was also director of the School of Education (1894-1904), and in 1904 he was appointed professor of philosophy in Columbia University. The degree of LL.D. was conferred on him by the universities of Wisconsin and Vermont. Dewey became actively interested in the reform of educational theory and practice,

and while at the University of Chicago he put his educational principles to the test in the University High School. Among his philosophical colleagues he stands with William James as one of the two great American leaders of the pragmatic movement, although with his aversion to scholastic labels he is reluctant to call himself a pragmatist. (See PRAGMATISM.) His first original work in philosophy was in the field of ethics, and then he turned to logic, applying there the methods that he had worked out in the study of morality. Just as in morality new situations call for new ideals, so in thought, he maintains, new meanings are given to old categories by the new uses to which they are put in dealing with new problems. "If we put ourselves in the attitude of a scientific inquirer in asking what is the meaning of truth per se, there spring up before us those ideas which are actively employed in the mastery of new fields, in the organization of new materials. This is the essential difference between truth and dogma, between the living and the dead and decaying. Above all, it is in the region of moral truth that this perception stands out." Ideas are plans of action, and "truth means the effective capacity of the idea 'to make good.'" Dewey's logic is thus instrumentalistic (see INSTRUMENTALISM), and it is connected with the theory that reality is experience, that everything is what it is experienced as being. This view he calls "immediate empiricism." (See EMPIRICISM.)

Dewey's publications include: *Outlines of a Critical Theory of Ethics* (1881); *Study of Ethics* (1894); *The Significance of the Problem of Knowledge* (1897); *My Pedagogical Creed* (1897); *The School and Society* (1900); *Studies in Logical Theory* (1903); *Ethics*, in collaboration with Tufts (1908); *How We Think* (1909); *Influence of Darwin on Philosophy and Other Essays* (1910); *Interest and Effort in Education* (1913). Consult: James, *Pragmatism* (1907) and *The Meaning of Truth* (1909); DeLaguna, *Dogmatism and Evolution* (1910); Moore, *Pragmatism and its Critics* (1910); and recent volumes of the *Philosophical Review* and the *Journal of Philosophy, Psychology, and Scientific Methods*, where his views have been assailed and defended by many writers.

DEWEY, LYSER HOXIE (1865-). An American botanist, born at Cambridge, Mich. In 1888 he graduated from Michigan Agricultural College, where for the next two years he taught botany. He was an assistant botanist of the United States Department of Agriculture from 1890 to 1902 and thereafter botanist in charge of fibre investigations. In 1911 he was the representative of the United States to the International Fibre Congress at Soerabaya, Java. His publications comprise bulletins of the United States Department of Agriculture on the production of fibre from flax, hemp, sisal, and manila plants, on the classification and origin of the varieties of cotton, and also investigations on grasses and troublesome weeds.

DEWEY, MELVIL (1851-). A pioneer American librarian and educator. He was born at Adams Centre, N. Y., and graduated at Amherst College in 1874. In 1876 he published his *Decimal Classification* (7th ed., 1911, as *Decimal Classification and Relative Index*), and founded the *Library Journal*, the organ of American librarians. He took an active part

in founding the American Library Association, of which he was secretary for 15 years and twice president. At this period he also edited the *Spelling-Reform Bulletin*, the *Metric Bulletin*, and similar educational publications. From 1883 to 1888 he was librarian of Columbia College, where he established (1884) a school of library economy. This was transferred to Albany in 1890 as the State Library School, Dewey remaining director until 1906. He was from 1888 to 1900 secretary and executive officer of the University of the State of New York, from 1888 to 1906 director of the New York State Library, and in 1904-06 also State director of libraries. He prepared cataloguing rules that are widely used; his "decimal classification" has been adopted in most American and in many foreign libraries. He contributed to the first edition of the *NEW INTERNATIONAL ENCYCLOPEDIA*.

DEWEY, ORVILLE (1794-1882). An American Unitarian clergyman. He was born in Sheffield, Mass., graduated at Williams College, and later became a divinity student at Andover. He preached in Boston for two years, as assistant to Dr. Channing. In 1823 he became pastor of the Unitarian Church in New Bedford. He went to New York in 1835 and there secured the erection of the church of the Messiah. About 1844 he quitted the pulpit and lectured in various parts of the country. Among his works are: *Letters on Revivals*; *Discourses on Human Nature*; *Discourses on Human Life* (1841); *Discourses on the Nature of Religion*; *The Unitarian Belief*; *The Problem of Human Destiny* (Lowell lectures, 1864). A collected edition of his works appeared in New York (3 vols., 1848-52). Consult his *Autobiography and Letters*, ed. by his daughter (Boston, 1883).

DEWEY, RICHARD (SMITH) (1845-). An American alienist and neurologist, born at Forestville, N. Y. He graduated (M.D.) from the University of Michigan in 1869 and in 1870-71, during the Franco-Prussian War, was volunteer assistant surgeon at the field hospital at Pont à Mousson, France, and at the Reserve Hospital at Hesse-Cassel, Germany. Part of 1871 he spent in study under Virchow at Berlin. He was assistant physician at the State Hospital for the Insane at Elgin, Ill. (1872-79), medical superintendent of the State Hospital for the Insane at Kankakee, Ill. (1879-93), professor of mental and nervous diseases at the Chicago Postgraduate Medical School (1893-1909), and after 1895 head of the Milwaukee Sanitarium. In 1896 he was president of the Medico-Psychological Society. He is a contributor on mental diseases to medical journals.

DEWEYLITE. A hydrated magnesian silicate, related to serpentine. It is amorphous and ranges in color through shades of white, yellow, red, and brown. Deweyite was named from Prof. Chester Dewey, an American chemist and naturalist.

DEWI, SAINT. See DAVID, SAINT.

DE WINDT, HARRY (1856-). An English explorer, born in Paris and educated at Magdalene College, Cambridge. In 1876-78 he was aid-de-camp to Rajah Brooke, of Sarawak, who had married De Windt's sister. Among his journeys were one to the prisons of western Siberia in 1890, another to those of eastern Siberia in 1894, one to the Klondike in 1897, and trips through the Sahara and Morocco in

1911-13. He wrote: *On the Equator* (1882); *From Peking to Calais by Land* (1887), a record of his ride across the two continents; *A Ride to India* (1890), describing a trip from Russia via Persia; *Siberia as It Is* (1892); *The New Siberia* (1895); *Through the Gold Fields of Alaska to Bering Straits* (1898); *True Tales of Travel and Adventure* (1879); *Finland as It Is* (1901); *From Paris to New York by Land* (1903), an account of his travels in 1896 for *Pall Mall Gazette*; *Through Savage Europe* (1907), a tour of the Balkan states for the *London Daily Express*; *My Restless Life* (1908); and some poems and novels.

DEWING, THOMAS WILMER (1851-). An American figure and portrait painter. He was born in Boston, May 4, 1851, and studied in Paris under Boulanger and Lefebvre from 1876 to 1879. His canvases are small in size, delicate and subtly refined in conception and treatment, soft and evanescent in color, and full of poetic charm. Among his best paintings are: "The Days" (Clark prize, 1887); "The Lady in Yellow"; "The Lady in White"; "The Letter" (Metropolitan Museum, New York); "The Recitation" and "The Lady in Green and Gray" (Art Institute, Chicago); "Summer" (National Gallery, Washington); and 20 paintings in the Freer collection (Detroit), including "A Lute Player" and "A Musician." On the death of the owner these will pass to the National Gallery. He was a member of the Society of American Artists, was elected to the National Academy of Design in 1888, and received many medals.—His wife, MARIE OAKLEY DEWING (1857-), paints still life, especially flowers, with a delicacy and refinement reminiscent of her husband's figure pieces.

DE WINTER, de winter, JAN WILLEM (1750-1812). A Dutch admiral. He was born at Kampen and entered the navy at the age of 12. He fought in the French ranks under Dumouriez and Pichegru, rising to the rank of brigadier general. Upon his return to Holland in 1795 he became commander of the Dutch fleet, consisting of 15 ships of the line and 12 frigates. On Oct. 11, 1797, he was attacked by a British fleet under Admiral Duncan and defeated in the hotly contested battle of Camperdown, his own ship, the *Frisheid*, and seven others falling into the hands of the British. He was taken as a prisoner of war to England, but was treated there with distinction, and upon his return to Holland was not only exonerated from blame, but commended for his gallantry and skill. In 1798 he became Minister Plenipotentiary to France, and in 1802 was reappointed to the command of the Dutch fleet and attempted to put down piracy in the Mediterranean. He was buried in the Pantheon, his heart in the Nicholas Church of Kampen.

DE WITT, de wit, CORNELIUS (1623-72). A Dutch naval officer. He was born at Dort and was educated at Leyden. In 1652 he and Ruyter succeeded Tromp in command of the Dutch fleet, which Blake defeated in September off Kentish Knock. Under Admiral de Ruyter he participated in the burning of the British shipping in the Medway (1667) and in 1672 took a conspicuous part in the battle of Solebay (Southwold). He was charged by Tichelaar with participation in the plot to murder the Prince of Orange and after being tortured was sentenced to banishment. As he was leaving his prison, he was attacked by the burghers of

The Hague and murdered, with his brother, Jan De Witt. He was an able officer and a man of broad general culture.

DE WITT, JAN (1625-72). A celebrated statesman of Holland, born at Dort, Sept. 24, 1625. He was the son of Jacob De Witt, a vehement opponent of William II, Prince of Orange. Young De Witt was carefully educated and soon exhibited remarkable ability. He was one of the deputies sent by the states of Holland in 1652 to Zealand for the purpose of dissuading that province from adopting the cause of Orange. There his eloquence secured him such universal confidence that he was made Grand Pensionary of Holland, an office to which he was several times reelected. The Orange party, supported by the populace and the clergy, was ever striving to increase the power of the young prince (afterward William III), who was then a mere infant: the Republican, or Oligarchic, party, composed of the nobles and the wealthier burghesses, at the head of which was De Witt, sought, on the other hand, to strip the house of Orange of all power and to abolish entirely the office of stadtholder. During William's minority the advantage was with De Witt and the Republicans. In 1654, on the conclusion of the war with England, a secret article was inserted in the treaty drawn up between De Witt and Cromwell, in virtue of which the house of Orange was to be deprived of state offices for all time. The accession of Charles II severed the friendly relations of England and caused De Witt to lean towards France. A commercial treaty between France and Holland was followed, in 1665, by another English-Dutch war, which lasted until the Peace of Breda, in 1667. The result was that the power of the Republican party in Holland seemed firmly established, for in the same year a perpetual edict was proclaimed abolishing forever the office of stadtholder. But in reality, however, the power of De Witt was diminished, and he was soon compelled to concede a larger measure of influence to the house of Orange. His prospects became still more clouded when the designs of Louis XIV upon the Spanish Netherlands became manifest. The Orange party carried their point in the elevation of William to the family dignity of stadtholder. On the invasion of the Netherlands by Louis XIV, in 1672, the Prince of Orange was appointed commander of the Dutch forces; and when the first campaign proved unfortunate, the popular clamor against De Witt greatly increased. He had previously resigned his office of Grand Pensionary, and now his brother Cornelius, accused of conspiring against the life of the stadtholder, was imprisoned, tortured, and condemned to perpetual banishment. De Witt went to see him on his release from prison, and as they were coming out they were attacked by an infuriated mob and were both murdered, Aug. 20, 1672. The States-General demanded an investigation and the punishment of the murderers, but the stadtholder did not take the necessary steps. De Witt was personally a man of the most upright character. Consult: Portalia, *Jan De Witt* (Eng. trans., 2 vols., London, 1885); Geddes, *The Administration of John De Witt* (ib., 1879); Motley, *History of the United Netherlands* (4 vols., New York, 1860-68); Beck, *History of the Netherlands* (ib., 1898-1907).

DE WITT, JOHN (1821-1906). An Ameri-

can Reformed Dutch scholar. He was born at Albany, N. Y., Nov. 29, 1821; graduated at Rutgers College in 1838 and at New Brunswick Theological Seminary in 1842; was professor of Oriental literature (1863-84) and of New Testament exegesis (1884-91) in the latter institution. He was a member of the Old Testament Company of the American Revision Committee (1872-85) and author of *The Praise Songs of Israel*; *A New Rendering of the Book of Psalms* (1885).

DE WITT, JOHN (1842-). An American Presbyterian scholar. He was born at Harrisburg, Pa., Oct. 10, 1842; graduated at Princeton College in 1861 and at Union Theological Seminary, New York City, in 1865. He became professor of Church history in Lane Theological Seminary, Cincinnati, Ohio, in 1882, and of the same in Princeton Theological Seminary in 1892. He wrote a *History of Princeton University* (1896).

DE WOLFE, ELSIE (1865-). An American decorator and actress, born in New York City. She made her theatrical début in Sardou's *Thermidor* in 1891, playing the rôle of Fabienne with Forbes-Robertson. In 1894 she joined the Empire Company under Charles Frohman. In 1901 she brought out *The Way of the World* under her own management at the Victoria Theatre, and later she toured the United States with this play. She also appeared in the title rôle of Hubert Davies's play, *Cynthia* (1903), as Estelle Kitteridge in *The Other Girl* (1903), and as Mrs. Lovette in *A Wife without a Smile* (1904). She retired from the stage in 1905 and took up as a specialty artistic interior decorating. In 1913 she published *The House in Good Taste*.

DEWSBURY, dîz-bêr-l. A parliamentary and municipal borough and manufacturing town in the West Riding of Yorkshire, England, on the Calder, 8 miles south-southwest of Leeds (Map: England, E 3). Dewsbury is noted for its manufactures of worsted, carpets, blankets, and various kinds of heavy woolen goods. There are collieries and iron works in the immediate neighborhood. It is on three railway lines and connected by the Calder and its branches with Hull and Liverpool. Among its notable buildings are the town hall, chamber of commerce, infirmary, and grammar school. The town received its charter of incorporation in 1862 and sends one member to Parliament. It owns its water and gas works, operates its electric-light plant, and maintains public baths, cemeteries, markets, technical schools, and free libraries. A modern sewerage system has been installed in connection with a sewage farm. Pop., 1901, 51,246; 1911, 53,358. At Dewsbury, in 627, Paulinus first preached Christianity to the Northumbrians.

DEW WORM. A British name for the earthworm. See EARTH WORM.

DEXIPPUS (Lat., from Gk. Δέξιππος). A Greek philosopher, a follower of the Neoplatonist Iamblichus, belonging to the middle of the fourth century A.D. He wrote commentaries on Plato and Aristotle, of which one, in explanation and defense of the Aristotelian categories, has appeared in both Latin and Greek texts. The former, under the title *Questionum in Categorías Libri Tres*, was edited by Félicien (Paris, 1549); the latter by Spengel (Munich, 1859).

DEXIPPUS, PUBLIUS HERENNIVS (c.210-273 A.D.). A Greek rhetorician, historian, and sol-

dier. He was born at Athens and, after holding the highest offices in his native city, commanded the army against the Heruli (q.v.) when they invaded Greece and captured Athens in 269 A.D. Photius describes three of his historical works: *Tà μετὰ Ἀλέξανδρον*, a history of Macedonia from the time of Alexander the Great, an epitome, apparently, of a work of the same title by Arrianus (q.v.); *Σύγγραμμιον Ἱστορικόν* (or *Χρονική Ἱστορία*), a chronological history from the earliest times down to the accession of the Emperor Claudius II, 268 A.D.; and *Συντάξις*, an account of the war against the Scythians or the Goths, in which Dexippus himself had fought. The last-named work is frequently referred to by the writers of the *Augustan History* (q.v.). For the fragments, consult Bekker and Niebuhr, *Scriptores Historiæ Byzantinæ* (Bonn, 1829), and Müller, *Fragmenta Historicorum Græcorum*, vol. iii (Paris, 1883). A public statue was erected in his honor, the base of which with its inscription has been preserved. Consult *Corpus Inscriptionum Atticarum*, 3, 716.

DEXTER. A town in Penobscot Co., Me., 40 miles west-northwest of Bangor, on the Maine Central Railroad and on the Sebasticook River (Map: Maine, C 3). It contains a public library. There are woolen mills, machine shops and foundries, and vegetable canneries. The water works are owned by the town. Pop., 1900, 2941; 1910, 3530.

DEXTER, EDWIN GRANT (1868-). An American educator, born at Calais, Me. He graduated in 1891 from Brown University, where he taught for a year and then (between 1892 and 1899) was science master of Colorado Springs High School, director of the Colorado Springs Summer School of Science, Philosophy, and Languages, and professor of psychology in the State Normal School at Greeley, Colo. In 1899 he gained a Ph.D. at Columbia University and the higher diploma of Teachers College. From then until 1907 he served at the University of Illinois in various capacities—as professor of pedagogy and psychology, director of the summer term, director of the School of Education, and dean. He became commissioner of education in Porto Rico and chancellor of the University of Porto Rico in 1907. He was president of the National Society for the Scientific Study of Education in 1905-06 and president of the child-study section of the National Education Association in 1905-07. Besides serving as associate editor of the *Internationales Archiv für Schulhygiene* and of the *Jahrschrift für Korpeliche Erziehung* and contributing some 50 articles to scientific and educational journals, he is author of *A History of Education in the United States* (1904) and *Weather Influences* (1904).

DEXTER, HENRY MARTYN (1821-90). An American clergyman and historian. He was born in Plympton, Mass., son of a Congregational minister, graduated at Yale in 1840 and at the Andover Theological Seminary in 1844; and was pastor of a Congregational church at Manchester, N. H., from 1844 to 1849, and of the Berkeley Street Congregational Church in Boston from 1849 until 1867. He edited the *Congregationalist* from 1851 till his death, becoming in 1867 editor in chief of the *Recorder*, in which the *Congregationalist* had been merged; and he edited the *Congregational Quarterly* from 1859 to 1866. He held a pastorate at Dorchester, Mass., from 1869 to 1871, and from

1877 to 1880 delivered annual courses of lectures on Congregationalism at Andover Theological Seminary. He wrote on the history of the Congregational church and the ecclesiastical history of New England and left his library to Yale University. Among his publications are: *The Voice of the Bible the Verdict of Reason* (1858); *Congregationalism: What it is, Whence it is, How it Works, Why it is Better than Any Other Form of Church Government, and its Consequent Demands* (1865); *The Church Polity of the Pilgrims the Polity of the New Testament* (1870); *Roger Williams and his Banishment from the Massachusetts Colony* (1876); *The Congregationalism of the Last Three Hundred Years with a Bibliographical Appendix*, of 7250 titles (1881)—his most valuable work and the most important book on the subject; *A Handbook of Congregationalism* (1880); *The True Story of John Smythe, the Se-Baptist* (1881); *Common Sense as to Woman Suffrage* (1885); *Early English Exiles in Amsterdam* (1890); and with his son, Henry Morton Dexter, *The England and Holland of the Pilgrims* (1905), posthumous. He also edited *Church's Eastern Expeditions and Entertaining Passages Relating to King Philip's War, and Mourt's Relation*; and left in manuscript *A Bibliography of the Church Struggle in England during the Sixteenth Century and the Pre-History of Plymouth Colony, with the English and Dutch Life of the Plymouth Men*.

DEXTER, HENRY MORTON (1846-1910). An American clergyman, historian, and editor, born at Manchester, N. H., son of Henry Martyn Dexter. He graduated from Yale University in 1867 and from Andover Theological Seminary in 1870, spent three years in travel, was ordained to the Congregational ministry, and served as pastor of the Union Church at Taunton, Mass. (1873-78). From 1878 to 1891 he was editor of the *Congregationalist*. During several visits to England and Holland he made investigations, particularly of the history of the Pilgrims and early American colonists, and he prominently promoted the erection of a memorial tablet to John Robinson at Leyden, Holland, in 1891. Besides magazine articles on historical subjects, he is author of *The Story of the Pilgrims* (1899) and *England and Holland of the Pilgrims* (1905).

DEXTER, SAMUEL (1761-1816). An American jurist. He was born in Boston, graduated at Harvard in 1781, and was admitted to the bar in 1784. He was a member of the State Legislature and served in Congress both as Representative and Senator. He was appointed Secretary of War in June, 1800, and from December of this year until the inauguration of Jefferson was Secretary of the Treasury. He published a *Letter on Freemasonry; Progress of Science*, a poem (1780); *Speeches and Political Papers*.

DEXTER, TIMOTHY (1743-1806). An American merchant, born at Malden, Mass. He rose to great affluence, but is memorable chiefly for his eccentricities. Assuming the title of Lord Timothy Dexter, he built extraordinary bizarre houses at Newburyport, Mass., and Chester, N. H. The garden of the former he adorned with about 40 colossal wooden statues of famous men, including himself. He also maintained a poet laureate and formed a collection of paintings composed entirely of daubs. He was the author of *A Pickle for the Knowing Ones* (1838; reprinted, 1881). Having been troubled by his

printers in regard to punctuation, he retaliated by writing a pamphlet without a comma or any other point, but displaying at the end half a page of points in a mass, with the invitation to his readers to "pepper the dish to suit themselves." He also rehearsed his own funeral procession in the most elaborate manner and cased his wife for not weeping at the sight of the cortege.

DEXTRIN, dēks'trin (from Lat. *dexter*, right, referring to its power of turning to the right the plane of polarized light). A name applied to several organic substances produced by the action of malt extract, saliva, or pancreatic juice upon starch paste, the first product of the transformation being soluble starch, and dextrin being produced by the hydrolysis of the latter. A continuation of the hydrolytic action results in the formation of sugars. The principal dextrans are erythro-dextrin, achro-dextrin, and maltodextrin, all of which have the same relative composition as starch ($C_6H_{10}O_5$); their molecular weights, however, are unknown, and the first two are very probably mixtures. Achro-dextrin may be prepared by the prolonged action of saliva or pancreatic juice on starch paste; when the solution ceases to be colored by the addition of iodine, i.e., when all the starch has been transformed, the solution is concentrated by evaporation and precipitated with alcohol. The substance thus obtained is completely freed from maltose by warming with mercuric cyanide and caustic soda and may be further purified by dissolving in water and reprecipitating with alcohol. Maltodextrin appears to be a pure chemical compound, and its molecule is known to contain an aldehyde group. See ALDEHYDES.

Dextrin (British gum or starch gum) is often used as a substitute for gum arabic in the processes of calico printing and for stiffening different goods; it is also applied to the back of postage stamps. Its value as a substitute for gum consists in its being more flexible and less brittle, when dry, than that substance. For commercial purposes it is prepared on a large scale either by moistening potato starch with weak nitric acid, then drying and heating to 110° C., or by simply heating the starch to about 250° C. When thus prepared, dextrin contains considerable amounts of dextrose and unaltered starch. An excellent substitute for dextrin as a textile finish is now made by heating equal weights of starch and glacial acetic acid at 90° C. (194° F.) for two or three hours. The product, which is commercially known as *feculose*, is chemically a polyacetate, or rather a mixture of acetates, of dextrin.

DEXTROSE. See GLUCOSE.

DEY, dā (Turk. *dā*, maternal uncle). A title applied colloquially to any elder, especially in former times among the Janizaries; hence, when the commander of that corps was associated with the Turkish pasha in the government of Algeria, the name was retained for him and then, by extension, came to be applied to any pasha or regent. Early in the eighteenth century the Dey of Algiers emancipated himself from the authority of the Sultan. Tunis and Tripoli were also sometimes ruled by deys in place of the bey (q.v.).

DHABB, dāb, or **DHOB**, dōb. See DABB.

DHAKA. See DACCA.

DHAK TREE, dāk or dāk. See BUTEA.

DHAL, dāl. See PIGEON PEA.

DHAMAR. See DAMAR.

DHAMMAPADA, d'hūm'mā-pūd'ā (Pāli, footprint of right). The name of a division of the sacred writings of the Buddhists. It has been translated by Max Müller, in vol. x of the *Sacred Books of the East*; while the Pāli text was published, with a Latin translation, by V. Fausbøll (Copenhagen, 1855), and an important Pāli commentary was edited by H. C. Normand (London, 1909-12). For selections, consult Anderson, *Pāli Reader* (London, 1901-07).

DHANIS, dā'nēs', FRANÇOIS, BARON (1859-1909). A Belgian explorer, born in London. He early went to Africa to aid in extending the Belgian possessions there, in 1888 founding several stations on the Middle Congo and in 1890 exploring the Stanley Falls region to the river Kwango. Attacked by Arab slave raiders, he marched against several fortified Arab towns and succeeded, after two years of hostilities (1892-93), in establishing the supremacy of the Congo Free State. He returned to Belgium and was raised to the rank of Baron; but in the next year (1895) he was sent back to the Congo as Vice Governor. During an attempted expedition to the Nile in 1896-97 the black troops mutinied, Dhanis's brother was killed, and Dhanis himself barely escaped. The last 10 years of his life were spent in retirement in Belgium.

DHAR, dār. The capital of a native state of the same name in Central India, situated 33 miles west of Mhow and 1908 feet above the sea (Map: India, C 4). It is surrounded by brick walls and contains two large mosques. Ruins of an ancient fortification, a mosque, houses of worship, and tombs testify to the former greatness of the city, which is said to have had a population of 100,000. It is the centre of grain trade for the district. Pop., 1901, 17,792; 1911 (est.), 15,000.

DHARMAŚASTRA, d'hār'mā-shās'trā. The name given to the metrical law books of Manu, Yajñavalkya, and others. The law book of Manu is relatively recent, but its date cannot be definitely fixed. It is translated by Burnell (London, 1884). Yajñavalkya's work dates from the third century A.D. A collection of these texts is given in the *Dharmaśāstrasangraha*, ed. by Pandit Jīhananda Vidyā-sagara (Calcutta, 1876). Consult Jolly, "Recht und Sitte," in Bühler's *Encyclopædia of Indo-Aryan Research* (Strassburg, 1896), with bibliography.

DHARMAŚŪTRA, d'hār'mā-sū-t'rā. A division of the Sūtra, or ritual literature connected with the Vedas. They are works which fix the rules of life in relation to others, and are the source of the Dharmaśāstra.

DHĀRWĀR, dār'wār. The capital of a district of the same name in the Presidency of Bombay, India, close to the frontier of Madras (Map: India, B 5). It has a strong fort, and government and native schools, and is an important railway centre. It has railway connection with Marmagao in the Portuguese Colony of Goa, through which port it carries on an extensive export trade in cotton. It has a large jail, and prisoners manufacture carpets, table linen, cloths, and cane goods. It is the headquarters of the Southern Mahratta Railway. Pop., 1901, 31,279; 1911, 30,289.

DHAUN, COUNT VON. See DAUN.

DHĀWĀLAGIRI, d'hwā-lā-gē'rē, or **DHWĀLAGIRI**, or **DHAULAGIRI** (Hind., white mountain). One of the highest peaks of

the Himalayas (about 27,000 feet), situated in Nepal, near the parallel of 29° N. (Map: India, D 3).

DHEGIIHA (d'hā'gē-hā) **INDIANS**. A group of Siouan tribes, which included the Osage, Omaha, Quapaw, Kansas, and Ponca Indians. See **SIOUTAN STOCK**.

DHOLE, dōl. A wild dog of India. See **Dog**.
DHOUBRA, dōor'ā. See **SORGHUM**, paragraph *Nonsaccharine*.

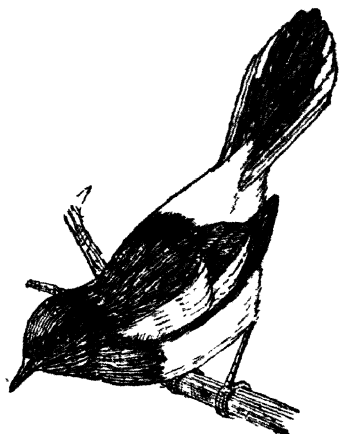
DHOW, dou. A vessel common to the Arabian Sea and the east coast of Africa. It is usually from 150 to 250 tons' burden by measurement and is built like a grab (q.v.) with 10 or 12 ports. The rig is usually lateen with a single mast and sail, and the latter is set on an enormous yard which is as long as the vessel. The halliards of the yard consist of a pendant and threefold purchase. The lower block of the tackle is secured to the weather rail, and the end of the fall is also made fast there; the tackle thus becomes the backstay for supporting the mast, the only other rigging on it being three shrouds each side. Vessels of this type were regularly employed in the slave trade on the east coast of Africa.

DHULIP, d'hū-lēp', or **DHULEEP SINGH** (1838-93). An Indian maharajah, son of the famous Ranjit Singh, ruler of the Sikhs. Upon the death of his brother Charak Singh, Dhulip, although still in his minority, succeeded to the throne, but, after a prolonged but ineffectual warfare against the English, was compelled by the Peace of Lahore (1846) to turn over the administration to the British. A rising of the Sikhs in 1849 resulted in his renouncing the throne in consideration of an annuity of £40,000. He was educated in England and became a Christian. He married a German in 1864 and after her death an Englishwoman. An attempt to re-establish his authority in 1886 (when he abjured Christianity) proved unsuccessful and resulted in the loss of his pension. After a desultory career in Russia and France, he was pardoned by the Queen, and his pension was renewed. He died in Paris from an attack of apoplexy.

DHUNCHEE, dūn'chē (E. Ind.), *Sesbania aculeata*. A plant of the family Leguminosæ. The dhunchee is an annual herbaceous plant, much cultivated in India on account of its fibre; it has an erect, sparingly branched stem, 6 to 10 feet high. It is a plant of rapid growth and succeeds best in low and wet soils. Its fibre is coarser than hemp, except when it is cut at a very early period of its growth; it is durable in water, but contracts considerably when wetted. It is steeped and prepared very much like sunn (q.v.). It is native to the Malabar coast and is also grown in China. It is sown at the rate of 30 pounds of seed per acre. The yield varies within wide limits, about 500 pounds of fibre per acre being a fair average.

DHYAL BIRD, d'yāl-bērd', or **DYAL** (native of E. Ind.). An Oriental bird of the genus *Copsychus*, of which six or seven species are familiar visitors to gardens and villages throughout southeastern Asia. They belong to the thrush family, subfamily Rutiliinae. The best known is *Copsychus saularis*, common from Ceylon to China, and reminding British residents of their robin redbreast by its confiding and cheerful ways. It builds a rude nest in a hole in a tree and during the breeding time is comically pugnacious. It has a pleasing song, and all the species are kept as cage birds and are

susceptible of learning tricks. The dress of the male is black and white; that of the female brownish.



MALACCA DRYAL BIRD
(*Copsychus saularis*).

DRYĀNI BUDDHA, d'hi-ā-nē būd'dā (Skt., meditation Buddha, from *dhyāni*, devoted to meditation, from *dhyāna*, Pali *jhāna*, meditation, from *dhyā*, to meditate + *buddha*, enlightened, p.p. of *budh*, to awake). One of five Buddhas, named Vairocana, Akshobhya, Ratnasambhava, Amitabha or Amitayū, and Amoghasiddhi, with their female counterparts, called Taras or Saktis. In some Buddhist texts their number is raised to 6, 10, or even more. They are distinguished from the Adi Buddha (q.v.), or primeval Buddha, and all other incarnate Buddhas (Manushi Buddhas), as well as from the potential future Buddhas or Bodhisattvas, by being eternal, noncorporate, and produced from meditation alone. Thus they correspond to the archetypal ideas of the Platonic philosophy, the human Buddhas and the Bodhisattvas being conceived as incarnations or emanations of the ideal Buddhas, and may in a certain sense be considered as the gods of the essentially atheistic Buddhism. In art the Dhyani Buddhas are of the customary Buddha type, but are distinguished by varieties of ornamentation of their lotus seats and also by the positions of their hands and sometimes by different colors of paint. Their sanctuaries, which have the shape of a pile of rice, are termed *cātyas*, instead of *vihāras* and *stupas*. See **BUDDHISM**.

DI'ABASE (from Gk. *di-*, double + *basas*, basis, base, a going, from *basiv*, *basinein*, to go; influenced in form by Gk. *diabasos*, *diabasis*, passage, from *diá*, *dia*, through + *basas*, basis, a going, base). A crystalline igneous rock, of which the essential constituent minerals are lime-soda feldspar and pyroxene (augite). The texture of diabase while generally crystalline throughout, differs from that of granite in that the augite incloses the feldspar, owing to the later period of augite crystallization. The feldspar of diabase is usually in bladed crystals, which take all directions in the augite and give the rock a peculiar interlocking radial texture, which is especially noticeable in specimens of

coarse grain. If the grains of augite be large in comparison with the size of the feldspar blades, the effect produced is a noteworthy mottling which is described as "lustre mottling." The average chemical composition of diabase varies but little from that of gabbro (q.v.), the difference of the two rocks being chiefly of structural nature. The closest affinities exist chemically, mineralogically, and texturally between diabases and basalts (q.v.), and, indeed, most American petrographers recognize no important difference between them; the rocks of greater geologic age, which consequently show greater decomposition, being, however, more generally described under the term "diabase" and the more recent occurrences as "basalt." Olivine, if present in a diabase, makes the rock an olivine diabase. Diabase is quite subject to alteration, the augite being replaced by hornblende and the olivine (if present) by serpentine. Both of the newly developed minerals being green, the rock assumes by this alteration a greener color. Important occurrences of diabase are those of the copper-bearing Keweenaw series of Lake Superior; the Palisades of the lower Hudson River, and the Hanging Hills of Meriden, Conn., of Jura-Triassic age; and those of the Deccan plateau of southern India. See **GREENSTONE**; **BASALT**, **TRAP**.

DIABELLI, dyá-bél'le, ANTONIO (1781-1858). An Austrian composer and music publisher, born at Mattsee, near Salzburg. He studied with Michael Haydn and in 1803 settled in Vienna as a teacher of piano. In 1824 he established the publishing house of Diabelli & Co., which became one of the chief publishers of the works of Schubert. As a composer, he was exceedingly productive and cultivated all the forms. But his works are now forgotten, with the exception of his sonatas written for pedagogical purposes. These are still highly valued and likely to retain a permanent place among the best instructive works for piano-forte.

DIABETES, diá-bé'téz (Neo-Lat., from Gk. *diabáō*, *diabēō*; first used by Aretæus c.150 A.D.), siphon, from *diabainein*, *diabainein*, to stride, go through, from *diá*, *dia*, through + *basiv*, *basinein*, to go). A disease of which the principal symptom is an abundant flow of saccharine urine. Diabetes is of two kinds: 1. *Diabetes insipidus* is a mere symptom of a functional condition now generally termed *polyuria*, or an increased flow of normal (non-saccharine) urine, excessive thirst accompanying it; it is infrequent and not dangerous. 2. *Diabetes mellitus* (Lat. *mel*, honey) is a grave disease in which the liver does not perform its proper work in transforming starches and sugars during assimilation, and large quantities of liver sugar (resembling grape sugar) appear in the urine. Inositol (q.v.), or "muscle sugar," also appears in some cases in the urine. The cause of the disease is obscure, the pathology is uncertain, and the treatment is unsatisfactory. It is more common in males than females, and in Jews and Hindus than in other races. Although no age is exempt, the disease is most likely to develop in late middle life (40 to 60). The sedentary and well-fed classes are peculiarly liable to attack, although severe cases occur among the very poor. There is often a history of prolonged worry, or of fright or injury to the nervous system. Patients suffering from diabetes, besides urinating very frequently and in

large quantities, experience distressing thirst, with dryness of mouth and lips; loss of appetite, muscular weakness, emaciation, occasional ulcers, altered sight, and mental changes, generally consisting of confusion of ideas, indecision, and melancholia. In treating diabetic patients a diet is prescribed of gluten bread, skim milk, cheese, eggs, meats, fresh fish, green vegetables, tomatoes, and sour pickles. Sugars, starches, and indigestibles should be absolutely avoided. Bread made of gluten flour is very unpalatable, and, practically, the strict diet is rarely observed by the patient. Van Noorden showed, in 1903, that oatmeal may be substituted for bread without increase of glycosuria; Mossé reports similar results with potatoes, in a smaller proportion of diabetics and in the less severe cases. Several drugs are used, with varying success, including bromides and salicylates, opium, arsenic, and digestants. Milk soured with the Bulgarian bacillus has enjoyed some little repute in late years. It probably benefits by decreasing intestinal fermentation. Recovery is very rare. Death occurs either from diabetic coma or from lung complications or gangrene, to which such individuals are very susceptible. Temporary *glycosuria*, or sugar in the urine, occurs in some people after the use of chloral or the administration of an anæsthetic. Some always have a little sugar in the urine without having any other symptom of diabetes, especially gouty or very fat people. Diabetes is not, as is popularly supposed, a disease of the kidneys. No pathological changes are characteristic. Lesions of the medulla have been described, but the theory of a distinct "diabetic centre" in the medulla seems as yet to lack sufficient confirmation. Probably the most constant lesions are those found in the pancreas as noted by Langerhans. The most common change is a simple atrophy of the pancreatic tissue, with or without an increase in the interstitial connective tissue. Complete extirpation of the pancreas was shown to cause permanent diabetes in animals by Minkowski and V. Mering, in 1889. Opie, in 1900, discovered a connection between diabetes and disease of certain groups of pancreatic cells, called the "islands of Langerhans." It is now believed that these cells secrete a starch ferment which finds its way into the general circulation through the rich capillary network that surrounds them. Children of diabetic parents exhibit glycosuria during psychic strain or under amylaceous diet and need most careful rearing. Consult Fuchter, in Osler's *Modern Medicine*, vol. i (New York, 1907), and authorities there mentioned, and Allen, *Studies Concerning Glycosuria and Diabetes* (Boston, 1913). See DIET.

DIABLE BOITEUX, də'ā'b'l' bwa'tē', Lē (Fr., The Lame Devil). A famous satirical romance in dialogue form, by Le Sage (1707). It deals with the wonders wrought by a spirit, Asmodeus, whom Don Cleofas has accidentally released from imprisonment in a glass jar, and is chiefly derived from *El diablo cojuelo*, a Spanish work by De Guereva (1641). The satire furnished the basis for Foote's comedy *The Devil upon Two Sticks*.

DIABLETETS, də'ā'b'l'-rā' (Fr., little devils). A group of peaks in the western Bernese Alps, Switzerland, situated about 15 miles southeast of Lake Geneva, in the bend of the Rhone, in lat. 46° 20' N. (Map: Switzerland, B 2). They range from 900 to over 10,500 feet high and are covered with glaciers on the north and east

slopes. Owing to their strata of limestone, sandstone, and gypsum, the Diablerets are gradually being undermined, and their mountain masses fall from time to time with destructive effect.

DIACHYLON, dī-āk'ī-lōn (Gk. *διάχυλος*, *diachylos*, very juicy, from *διά*, *día*, through + *χυλός*, *chylos*, juice. A deceptive etymology). The common healing or lead plaster, made by combining litharge with olive oil. *Diachylon ointment* contains 500 parts of diachylon plaster, 490 parts of olive oil, and 10 parts of oil of lavender flowers.

DIACRITICAL MARK or **SIGN**, or **DIACRITIC** (Gk. *διακριτικός*, *diakritikos*, distinctive, from *διακρίνειν*, *diakrinein*, to distinguish, from *διά*, *día*, through + *κρίνειν*, *krinein*, to judge). A mark or sign used to distinguish different sounds or values of the same letter or character, such as those used in indicating the pronunciation or accent in this *ENCYCLOPEDIA*. Such marks or signs may arise, (a) as a degradation or gradual corruption of some combination of previously used characters, as in the case of the German unaltered vowels, *a*, *o*, *u*; or (b) they may be deliberately invented or chosen for some special purpose, as in most of the systems used for phonetic respelling in works of reference or in philological works.

Some of those in the first class were developed by writing one letter above, as a means of saving time or space, especially at the end of a line, when books were made by copying by hand. Thus, the German *a*, *o*, *u* were originally *ā*, *ō*, *ū*, and the superior letters were, for convenience sake, reduced to two dots. So the Swedish *d* or *Å* was originally *ao* or *Ao*, written with the *o* over the *a* or *A*, this *o* being finally changed into a simple circle. The cedilla (literally, little *zed* or *z*), on the other hand, is a degradation of a variant form (3 or 3) of the letter *z*, which was formerly written after the letter *c* to show that it was to be pronounced like *s*, when without the cedilla it would have had the sound of *k*. It is now chiefly used in French and Portuguese words. Likewise in Greek, the *iota subscript* was originally the second vowel of a diphthong and was written on the line and sounded, as in other diphthongs. But afterward (about 100 n.c.) it ceased to be pronounced, being swallowed up by the long *ā*, *η*, *ω*, before it. The custom of writing it under the line originated about the eleventh century. The dot over the *i* was originally a stroke similar to our modern acute accent (´), which served for the purpose of distinguishing it from the shaft of an *n* or an *m*. It is still used in that form over the Roman numerals in the prescriptions of physicians. So in the angular German running hand the sign *u* is placed over the vowel *u* to prevent confusion with *n*. The number of these diacritical marks resulting from degraded forms now or formerly employed in the various civilized languages is very large; but most of those now in use have either lost their primitive meaning or are of forgotten origin. To the class of arbitrarily invented or chosen diacritical marks belong most of those now in use in the alphabets of the civilized nations or races, such as those used in phonetic respelling and those used in the ordinary alphabets of many European nations whose alphabets have become fixed during comparatively recent times, as in the various Slavic alphabets, the Hungarian alpha-

bet, etc. The points used in the Hebrew and Arabic alphabets, as well as those used in Avestan, are arbitrary inventions used to indicate the vowels or modifications of the consonantal sounds of the original characters.

The diacritical marks which occur in the printing of common English words are the diæresis [-], the hyphen [-], the cedilla [ç], the acute accent ['], the grave accent [˘], and the tilde [˜]. By some authors the letter *h* when written after *c* or *s* or *t* is treated as a simple diacritic, although it is not properly a diacritical mark. The diæresis is a survival of the Greek use of two dots over *o* or *u* to show that they did not form a diphthong with the preceding vowel. It is used in the same way in English. The tilde is used in English only over foreign-derived words, as in the word *cañon*. It is a degradation or corruption of the letter *n*, which was formerly indicated in many words by making the sign *~*, or even a straight mark [-] over the preceding letter, as *año* = *anno*. When final *-ed* is to be pronounced contrary to the usual rule, the fact is customarily indicated by using the grave or acute accent, thus, *reached*; and in the same way the fact that a final *-e* is to be pronounced is often indicated, thus *Brontë*. The hyphen sometimes serves the purpose of the diæresis, as in *re-entry*. Some of the characters used in phonetic spelling have by long usage become more or less fixed in significance: thus, the signs *-* and *˘* placed over vowels are practically always used to denote long and short sounds respectively; and the sign *˜*, called by many the circumflex accent, also usually denotes a long sound, as it did in Greek. In many modern English scientific works the acute accent ['] is used to denote a short accented vowel, and the grave accent [˘] is used to denote a long accented vowel. So the scheme of diacritical marks used in this *ENCYCLOPEDIA* is in very general use to indicate the sounds here denoted by them, being essentially the same as those employed in Webster's International Dictionary, and in various other preceding or abridged editions of the same work, and in the majority of the school books of the country. The system of the Century Dictionary is in many respects quite different, and that of the great English dictionary edited by Dr. Murray (*A New English Dictionary on Historical Principles*) is still different and extremely complex. The system used by the Standard Dictionary contains fewer diacritical marks, the differentiation being obtained by the use of the alphabet arbitrarily devised and selected for use by the American Philological Association. At present there is a growing tendency to adopt the alphabet of the International Phonetic Association, which is in almost universal use among phoneticians. For a list of these characters, see the articles *PHONETICS*; *PRONUNCIATION*, etc., and for the various diacritical marks employed in any language, consult a grammar of that language.

DIADDEM (Lat. *diadema*, Gk. *διάδημα*, *diadēma*, fillet, from *diadeiv*, *diadein*, to bind round, from *diá*, *dia*, through + *deiv*, *dein*, to bind). The name given to the fillet of silk, woolen, or linen which served as the distinguishing ornament of kings. It was generally narrow, being only a little broader on the forehead. The diadem of Bacchus, as it appears in ancient sculpture, was a plaited band going round the forehead and temples and tied behind, with the

ends hanging down. Among the Persians the diadem was bound round the tiara or turban and was of a blue color worked with white. The early Roman emperors refrained from using this ornament in order not to call up recollections of the hated kingly office. Diocletian was the first to introduce it again.

DIADDEM SPIDER (so called from the marking). The common cross spider (*Argiope diadema*), common everywhere in European gardens. See *SPIDER*.

DIADUMENOS (Gk. *διαδόμενος*, *diadoumenos*, binding round, from *diadeiv*, *diadein*, to bind round). A celebrated statue by Polyclitus (q.v.), representing a youthful athlete binding the fillet about his head.

DIÆRESIS, di-er'-e-sis. See *DIACRITICAL MARK*.

DIÆGEOTROPISM (Gk. *διά*, *dia*, through + *γῆ*, *gê*, earth + *τρόπος*, *tropos*, a turning). That form of geotropism, i.e., sensitiveness to gravity, wherein the bending organ comes to grow in a direction at right angles to the direction of gravity. Rhizomes and runners of many plants possess this property. See *GEOTROPISM*.

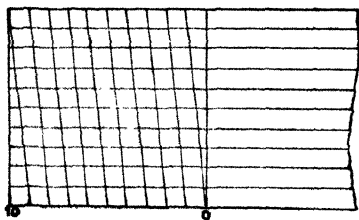
DIAGNOSIS (Gk. *διάγνωσις*, *diagnôsis*, discrimination, from *diagignôskō*, *diagignôskō*, to discriminate, from *diá*, *dia*, through + *γινώσκω*, *ginôskō*, to know). The determination of the nature of a disease as well as of the condition of the organ or tissues affected. This is the most important and difficult element in the practice of medicine. The methods of diagnosis are based on a study of symptoms, such as chill, fever, pallor, delirium, and physical signs, such as are appreciated by examination of the throat, chest, abdomen, eyes, urine, etc., with the aid of the thermometer, stethoscope, microscope, ophthalmoscope, electric battery, etc. To learn to make a diagnosis, the pupil must study disease at the bedside, and diseased and normal tissues, fluids, and organs, in the autopsy room and the laboratory, following the course of symptoms and signs from the invasion of disease to recovery or death.

DIAGONAL (Lat. *diagonalis*, from Gk. *διαγώνιος*, *diagōnios*, diagonal, from *diá*, *dia*, through + *γωνία*, *gōnia*, angle). In plane geometry, a straight line joining any two nonadjacent vertices of a rectilinear figure. A line between two adjacent vertices would coincide with a line of the figure, and hence a triangle has no diagonal. An ordinary four-sided figure, a quadrilateral, has two diagonals; a pentagon, five; a hexagon, nine, and so on. The general expression for the number of diagonals in such figures of *n* sides is $\frac{n(n-3)}{2}$, where *n* represents the number of sides. Thus, the number of diagonals in a dodecagon (q.v.), a polygon of 12 sides, is $\frac{12(12-3)}{2} = 54$. If the polygons are general, i.e., composed of lines of indefinite extent intersecting in the maximum number of points, the number of diagonals is given by the formula $\frac{n!}{8(n-4)!}$, where *n* is the number of sides; e.g., in a general quadrilateral, a figure formed by four lines of indefinite length intersecting in six points, there are $\frac{4!}{8} = 3$ diagonals, as is easily seen by drawing the figure.

Similarly, in a general dodecagon the number of diagonals is $\frac{12!}{8(12-4)!} = 1485$.

A diagonal of a solid bounded by limited planes is a line joining any two vertices so situated that the line does not lie in any face. The number of diagonals that can be drawn in any regular polyhedron (q.v.) is given by the formula $ns - \frac{n^2(s-2)}{2} - v$, where n is the number of faces, s the number of sides of a face, and v the number of faces grouped about the polyhedral vertices. Thus the cube has $\frac{1}{2} \cdot 4 \cdot \left\{ 6 \cdot 4 - \frac{3^2(4-2)}{2} - 3 \right\} = 4$ diagonals.

DIAGONAL SCALE. A system of lines by means of which fractional parts of a unit, usually hundredths, may be laid down or measured with compasses (q.v.). Such scales are of particular value in plotting maps from given data. (See SURVEYING.) In the figure the line from 0 to 10 represents one inch. The diagonal line which ends at 0 cuts off on the lines above



fractions of an inch, $\frac{1}{100}$, $\frac{1}{1000}$, $\frac{1}{10000}$; and so on. The next diagonal line cuts off $\frac{1}{100}$, $\frac{1}{1000}$, $\frac{1}{10000}$, . . . of an inch; and so on. A pair of compasses may be set by such a scale so that its points are 1.01, 1.02, . . . 1.11, 1.12, . . . 1.21, 1.22, . . . 1.99 inches apart, and thus be used to plot chains and links on a map of a given scale.

DIAGORAS (Gk. *Διαγόρας*). A Greek poet and philosopher of the fifth century B.C., born in Melos, an island of the Cyclades. He is said to have been a disciple of Democritus (q.v.) and to have resided long in Athens, where he won considerable distinction as a lyric poet, but only the scantiest fragments of his verses survive. He is better known to the later world, however, as an atheist, and as such is alluded to (some think) by Aristophanes in the *Clouds*, 830 (423 B.C.); he is definitely assailed by Aristophanes in the *Birds*, 1073 (414 B.C.). He was banished eventually for his opinions and died in Corinth. Besides his lyrics, he is said to have written a work called *Φρόνησις Λόγοι*, exposing the sacred Mysteries of Cybele and Dionysus (see BACCHUS), and a treatise entitled *Ἀπομυθολογέες Λόγοι*, 'Arguments to Dethrone the Deities.' Consult Zeller, *Philosophie der Griechen*, i (1892), and Starkie's edition of the *Clouds*, pp. 331-332 (London, 1911).

DIAGRAM (Lat. *diagramma*, Gk. *διάγραμμα*, figure from *διαγράφειν*, *diagraphēin*, to describe, from *διά*, *dia*, through + *γράφειν*, *graphein*, to write). A figure so drawn that its geometric relations may illustrate the relations between other quantities. The area of a rectangle is the product of the numbers representing its length and breadth; the diagram of a rectangle is the

visible symbol, corresponding to the equation $a = bl$; and, by analogy, the rectangle may be used to symbolize any quantity which is the product of two factors. Similarly, a parallelepiped may symbolize any quantity which is the product of three factors.

The purpose of mathematical diagrams in mathematical treatises is to assist the reader to follow the reasoning set forth in the text. It serves its purpose if those features which form the subject of the discussion are clearly brought out. The object in many cases, however, is simply illustration, and it is necessary only that the idea be clearly presented, accuracy of drawing being relatively unimportant—e.g., those showing electric connections require only a proper representation of the parts in their association with one another. Other diagrams, as those drawn for workmen by architects and engineers, are intended to furnish magnitudes or distances by actual measurement, and their execution cannot be too accurate.

A profile diagram shows such an outline as would be formed, e.g., if a hill were cut through by a vertical plane, and the material on one side of the plane were removed. Evidently a succession of such profiles might be laid on the same sheet of paper, the lines being distinctly drawn, and the whole would serve to compare several vertical profiles of the same mass. It is not necessary that vertical and horizontal measurements should conform to the same scale, provided each series of measurements is consistent in itself. Thus, *geographic* profiles, which include upon a single sheet the outlines of entire continents and ocean beds, usually have the vertical measurements on a scale several times as great as that used for horizontal distances; otherwise the diagram would be made inconveniently long, or the heights would be inconspicuously small. A *topographer's contour map* exhibits a series of curves, such as would be formed if a series of horizontal sections were made, and the outlines carefully drawn on paper. The drawing really shows the horizontal projections of the contour lines upon a surface parallel to the system. In *mechanical drawings*, particularly those designed to guide workmen in the construction of machinery, several connected views of the same object are required, each view giving some information which the others cannot furnish. Suppose that three planes are perpendicular to one another, like the bottom, one side, and one end of a rectangular box, and let an object, as a hexagonal nut, be placed within the trihedral angle thus formed. Looking from the front, we see an image of the nut projected against the back of the box; from the side, a different image is seen against the end of the box; from above, a third form appears against the bottom, while from some or all of these figures the necessary measurements may be obtained. If now the end of the box is swung outward into the plane of its back, and then both together are laid back into the plane of the bottom, we have the three coexistent drawings in one plane, and they may be transferred to, or be constructed on, one sheet of paper. In many cases the same points will find representation upon each diagram, and the fact may be indicated by the same letter; while the eye may be led from one position of the point to another by lines distinctively drawn to show that they are merely guides and not parts of the outline. See GEOMETRY, Descriptive.

Many devices have been invented by which diagrams illustrating natural phenomena may be automatically described. The physical experiment which produces the *parallelogram of forces* is a familiar example. As a more general illustration, suppose a spring *dynamometer* (q.v.) placed where it may receive the draft of a horse when moving a carriage. Let the movement of the spring be shown by an index whose motion is back and forth along a line in the direction of the draft. Fix a pencil to the index, and let its point rest upon a sheet of paper on a plane or a cylinder which moves at a uniform velocity in a direction perpendicular to the motion of the index. The combined movements of the pencil and paper beneath it will trace a more or less irregular line. If the force of draft is constant, the pencil will remain at a constant distance from the edge of the paper, and the trace will be parallel to the edge. If the paper does not move while the pencil varies, the line will be perpendicular to the edge. If both move, and the pencil is subject to a diminishing force, the trace will be oblique, approaching one edge; while, if the force increases, the oblique trace will diverge from the same edge. Such mechanism is often arranged for instruments which indicate meteorological, physiological, or other changes, as the force and direction of winds, or the pulsation of the arteries (see *SPHYGMOGRAPH*), or the movements of a clock combined with the observations of an astronomer. (See *CHRONOGRAPH*.) An important application of the same principle is found in the *indicator diagram*, by which the pressure of the steam in the steam engine and the work done by each stroke of the piston become matters of record. The paper moves with the movement of the piston, both in its excursion and return; the pencil moves at right angles to the direction of the motion of the paper, under the influence of the steam pressure, and the diagram drawn shows for each instant of the stroke the volume and pressure of the steam, while the total area of the diagram indicates the amount of work done. A mechanical device to illustrate the luminosity of various colors was invented by Newton and is known as *Newton's diagram*. In mechanics the stresses on the various parts of a frame or bridge are graphically exhibited by a form known as a *stress or funicular diagram*. The *seismometer*, *seismograph*, or *seismoscope* is an instrument to record the velocity, direction, and magnitude of seismic waves. See *HODOGRAPH*.

DIAKOVA, dǎ'a-kǒ'va. A town in the extreme southeastern corner of the Kingdom of Montenegro, on a tributary of the White Drin, 20 miles northwest of Pristred (Map. Turkey in Europe, C 3). Pop., about 15,000 mostly Mohammedan and Roman Catholic Albanians. For over three centuries Diakova belonged to the Turks, constituting an important town in the Ottoman Vilayet of Kosovo, but was occupied by Servian troops in the course of the Balkan War of 1912-13, and subsequently, by arrangement of the Great Powers and by agreement between Serbia and Montenegro, was surrendered to the latter country.

DIAL, THE. A well-known American magazine, founded at Boston, Mass., in 1840, as the official organ of the so-called "Transcendental" school of thought. As early as 1835 the idea was conceived by members of that school of idealists of starting a paper to be called the *Transcendentalist*, and Emerson, the same year,

went so far as to suggest that Carlyle should be invited to come to America to assume the editorship of it. The scheme was not in that form realized, and the paper which finally appeared, the *Dial*, was not issued till July, 1840, with Margaret Fuller (see FULLER, SARAH MARGARET) as editor. At the end of two years she was succeeded by Emerson. The paper, through lack of funds, came to an end with the April number of 1844, after a career marked by unusual brilliance in its material and extraordinary fame on the part of its contributors. In it had been published, among others, Emerson's prose essays entitled "The Transcendentalist," "The Conservative," and some of his best-known poems, as "The Sphinx," "Woodnotes," "The Problem," and "Fate." Constant contributors were Margaret Fuller, Amos Bronson Alcott, George Ripley, James Freeman Clarke, Theodore Parker, W. H. Channing, W. E. Channing, and Henry David Thoreau, who wrote for nearly every number. A reissue of the *Dial* has been published by the Rowfant Club. Consult Cooke, *Historical and Biographical Introduction to the Rowfant reissue* (London, 1902).

DIAL AND DIALING. The sundial is an instrument for measuring time by means of the motion of the sun's shadow. It is an instrument of very great antiquity, the earliest mention of it being in Isa. xxxviii. 8; and before clocks and watches became common it was in general use as a timekeeper. The art of constructing dials to suit any place and situation was then an important branch of mathematical study; now the subject is more an object of curiosity than utility.

A dial consists of two parts—the *stile*, or gnomon, usually the edge of a plate of metal, made parallel to the earth's axis, and pointing towards the pole, and the *dial plane*, which may be of any hard substance, and on which are marked the directions of the shadow for the several hours of the day, their halves, quarters, etc. Dials receive various names, according, mostly, to the positions which they are constructed to occupy. When the dial plane is on the plane of the horizon, the dial is called a horizontal dial; when perpendicular to that plane, a vertical dial. An equinoctial dial is one whose plane is parallel to the equator. Besides these names, there are others, such as the south dial, north dial, east dial, west dial, polar dial, declining dial, of which it is useless to write at length. These names all depend on the position of the dial plane. The cylindrical dial is a dial drawn on the curved surface of a cylinder. The ring dial is an ingenious small portable dial, but rather a curious toy than a scientific instrument.

A *night or nocturnal dial* is an instrument for showing the hour of the night by the shadow of the moon or planets. Moon dials may be constructed relative to the moon's motion; or the hour may be found by the moon's shadow on a sundial by computation.

Dialing. The *stile* of a dial being parallel to the earth's axis, those familiar with spherical trigonometry will readily see that the problem of constructing a dial resolves itself into that of ascertaining where the hour lines cut a given circle, with a view to the graduation of the dial plane. But even without a knowledge of trigonometry the principle may be readily understood from the following illustrations. Suppose a hollow and transparent sphere, as of glass, to represent the earth; and suppose its equator divided

into 24 equal parts by the meridians, one of them passing through a given place—say, London. (See HORIZON.) If the hour of 12 be marked at the equator, both on the latter meridian and that opposite it, and all the rest of the hours in order on the other meridians, those meridians will be the hour circles of London, because, as the sun appears to move round the earth in 24 hours, he will pass from one meridian to another in one hour. Then, if the sphere has an opaque axis, terminating in the poles, the shadow of this axis would fall, in the course of the day, on every meridian and hour, as the sun came to the plane of the opposite meridian, and would thus show the time at London and at all other places on the same meridian as London. If the sphere were cut through the middle by a plane in the horizon of London, and if straight lines were drawn from the centre of the plane to the points where its circumference is cut by the hour circles of the sphere, those lines would be the hour lines of a horizontal dial for London; for the shadow of the axis would fall upon each particular hour line of the dial when it fell upon the like hour circle of the sphere. Similarly, if we suppose the sphere cut by *any* other plane facing the meridian, the hour circles of the sphere will cut the edge of the plane in those points to which the hour lines must be drawn straight from the centre, and the axis of the sphere will pass a shadow on these lines at the respective hours. The like will hold in general of any plane, whether it face the meridian or not. The positions on the dial plane of the several hour lines can be calculated if we know the latitude of the place where the dial is to be used and the position of its plane relatively to the horizon and meridian. For a horizontal dial, the positions of the hour lines are given by the formula, $\tan h = \sin l \cdot \tan t$, where h is the angle between the hour and meridian lines on the plate, l is the latitude of the place, and t is the hour angle (in degrees = 15 times the number of hours between noon and the hour corresponding to the line).

The universal dialing cylinder, invented by Ferguson, is a glass cylindrical tube closed at both ends with brass plates, to the centres of which a wire axis is fixed. The tube is either fixed to a horizontal board at an angle equal to the latitude of the place, or moves on a joint, so that it may be elevated till its axis is parallel to the earth's at any latitude. The 24 hour lines are drawn on the outside of the glass, equidistant from one another and parallel to the axis. The XII on the upper side of the cylinder stands for midnight; the XII next the board for noon. When the axis is adjusted for the latitude and the board leveled, with both XII noon and midnight in the plane of the meridian, and the end towards the north, the axis, when the sun shines, will serve as stile, and cast a shadow on the hour of the day among the parallel hour lines. As the plate at the upper extremity of the cylinder is perpendicular to its axis and parallel to the equator, right lines drawn from the centre to the extremities of the parallels will be the hour lines of an equinoctial dial, and the axis will be the stile. A horizontal plate, if put into the tube, with lines drawn from the centre to the several parallels cutting its edge, will be a horizontal dial for the given latitude; and similarly, a vertical plate fronting the meridian and touching the

tube with its edge, with lines drawn from its centre to the parallels, will be a vertical south dial, the axis of the instrument in both cases serving for the stile, and similarly for any other plate placed in the cylinder. Consult: Littrow, *Gnomonik* (2d ed., Vienna, 1838); Sonnendorfer, *Theorie und Konstruktion der Sonnenuhren* (Vienna, 1864); Dawbarn, *The Sun Dial* (London, 1891); Gatty, *The Book of Sun Dials* (new ed., ib., 1900); Loeschner, *Ueber Sonnenuhren* (2d ed., Graz, 1906). Among the numerous earlier works on the subject may be mentioned: Leybourn, *The Art of Dialling* (London, 1681); Leadbetter, *Mechanick Dialling* (3d ed., ib., 1769); Emerson, *Dialling* (ib., 1770); Ferguson, *Select Mechanical Exercises* (ib., 1773).

DIALECT (Lat. *dialectus*, from Gk. διάλεκτος, *dialekto*s, dialect, discourse, from διαλέγεσθαι, *diagegesthai*, to converse, from διά, *dia*, through + λέγειν, *legein*, to say). The name "dialect" is given to those varieties or peculiar forms which a language assumes among the various tribes or other local divisions of a people. It is clear that the wider the separation comes to be between the several tribes, and the more they differ in mode of life and other circumstances, the more marked will become the differences of dialect. Also, when a particular tribe of this people increases in numbers and extends its territory, the same process is repeated, and its dialect is broken into a number of subdialects. The principal check upon this tendency to seemingly endless subdivision of language is furnished by an increasing degree of common culture and civilization. Where this is wanting, as in Africa and among the native populations of America, the subdivision is practically endless.

Another element is introduced into the problem by the fact that the civilization of some tribes develops more richly and ripens earlier than that of others, while some even undergo decline; this must occasion corresponding differences of dialect. Further, one dialect may become dominant over one or more of the others, through various influences, the chief of these being the power of poetry, especially if favored by external relations. Finally, if to superior manifestations of oratory and poetry in any dialect, the conservative aid of writing be added, there is created a written language; and this passes current among other tribes to the same extent that the literature of which it is the vehicle finds favor. It is not always the dialect most perfect in itself, nor yet that of the most powerful tribe or division of a people, that comes to be the written language. Accidental circumstances have in many cases decided the rivalry. The Bible happened to be translated by a High German, Luther, into his native dialect; other works on the all-engrossing subject of religion followed in the same dialect; happily, too, the art of printing had just attained the perfection necessary to give these productions general circulation. It was this concurrence of circumstances that decided that High German should in the future be the spiritual bond between the widespread German people. For there were other dialects whose claims to the distinction were at that time equal, if not higher. Likewise the Tuscan dialect owes its ascendancy over the other Italian dialects principally to the fact that Dante, being a native of that district, used it as his means of expression. In France the government became centralized

at an early date in the city of Paris, with the result that the dialect of Ile-de-France soon overshadowed all its competitors. See ENGLISH LANGUAGE.

When a dialect has thus become the vehicle of written communication, and of the higher kinds of oral address, its character and position become changed, and it stands henceforth in a sort of antagonism to the other dialects, and even to that out of which it sprang. As written language is chiefly employed in the higher departments of human thought and activity, the intellectual and moral elements predominate in it over the sensible; and what it gains in dignity, precision, and pliancy, it loses in richness of inflection, in friendly familiarity, and naturalness. In conflict with this standard speech, the dialects must go to the wall. They live for a considerable time, it is true, even in the mouth of the educated classes, but they are gradually more and more confined to the most necessary and familiar forms of intercourse and lose their characteristics in the stream of the written language. They thus become, after a time, the exclusive possession of the illiterate, in which position they preserve many relics of old grammatical forms long after these have disappeared from the language of literature. But so long as a language lives, the literary standard and the dialects never cease to act and react on one another.

The chief points of difference between dialects and the standard tongue fall under four heads. 1. The first consists of differences in the elementary sounds, each dialect having a tendency to substitute some one or more vowels or consonants for others. Thus, the standard English *bold* is, in Ireland, *bould*; in Scotland, *bauld*; *what*, where the *h* is nearly evanescent, becomes, in a Scotchman's mouth, or rather throat, *chwat*, and, in Aberdeenshire Scotch, *fat*—*f* in this dialect being regularly substituted for *wh*, or rather *hw*. 2. Each dialect has peculiarities of grammar. In many parts of England and in Scotland the plural of *eye* is not *eyes*, but the archaic *eyen*, or *een*, like *oren*. The habitual use of *be*, where the standard grammar prescribes *am*, *is*, *are*, etc., is prevalent in large districts of England. Of this kind is the use of the strong conjugation for the weak, or vice versa: as *loup*, *lap*, *luppen*, for *leap*, *leaped*, *leaped*. 3. Peculiarities of vocabulary. Those individual words current in one or more districts, but unknown to the standard vocabulary, are properly *provincialisms*. They are usually genuine words of an older stage of the language, that have survived longer in some localities than in others. Some provincialisms, as *learn* or *bairn*, for 'child,' *marrow* for 'fellow' or 'match,' to *greet* for 'to weep,' are common to Scotland and the north of England. Others are more local, as to *cleam*, for 'to fasten' or 'cement'; *heppen*, a Yorkshire term for 'pretty near'; *thrippa*, in Cheshire, 'to cudgel.' The exclusion of such words from the standard language is often accidental, and many of them might be and are with advantage resumed; as *marrow*, *gloaming*, etc. 4. Peculiarities of intonation. This is sometimes, though with little propriety, called *accent*, which means strictly the stress laid upon a particular syllable of a word. There are no doubt local peculiarities of this kind too. The tendency of standard English, especially the more recent, is to throw the accent towards the beginning of the word; in Scotland, the tendency

lingers to say *ewy* for *ewy*. But peculiarities of intonation lie in the different ways in which the pitch of the voice is managed—in the musical accompaniment of articulation. Differences in this respect give rise to the monotonous drawl of one district, the angry, querulous tone of another, the singsong of a third, etc.

So long as dialectic varieties of language were looked upon indiscriminately as corruptions and barbarisms, they were noticed by schools only that such corruptions might be avoided. A more rational philology, without trenching upon the rules of good writing, considers them essential parts of the speech of a people, and a knowledge of them necessary to any thorough investigation of the genius of that speech. It is obvious that *dialect* is entirely a *relative* term, and that what we call by that name in one connection we may call a language in another connection. Thus, Greek, Sanskrit, and Latin may be called sister dialects of that primitive language from which it is held that they, as well as the other members of the Indo-Germanic family, branched off. (See INDO-GERMANIC LANGUAGES.) Greek spoken of by itself, however, is a language, and Ionic, Doric, Attic, etc., are dialects of it. The same holds good with the others. In practice, however nearly related the speech of two peoples may be, we do not apply the term 'dialects' unless the peoples are mutually intelligible and have a common literary standard.

For several centuries collections of dialectic words have been made, but it is only within recent years that the subject has been studied scientifically and with reference to the exact sounds of dialectic words. The last stage in the study of the English dialects is marked by the publication of J. Wright's *English Dialect Dictionary* (London, 1898 et seq.), and *English Dialect Grammar* (Oxford, 1905), which comprise the dialects of England, of the Shetland and Orkney islands, and of those parts of Scotland, Ireland, and Wales where English is habitually spoken. Skeat's *English Dialects from the Eighth Century to the Present Day* (Cambridge, 1911), Joyce's *English as we Speak it in Ireland* (London, 1910), and Sparke's *Bibliography of the Dialect Literature of Cumberland, Westmoreland, and Lancashire* (Kendal, 1907) are also worthy of note. A list of the most important glossaries and grammars of the English dialects is given in Paul, *Grundriss der germanischen Philologie* (Strassburg, 1900-09), and a shorter list may be found in Sonnenschein, *Best Literature* (London, 1895). A study of the American dialects is being conducted by the American Dialect Society, the results of which are appearing in the *Dialect Notes* (Norwood, Mass., 1890 et seq.). The investigation of the German dialects is summarized in Paul's *Grundriss*, and in Reis's *Die deutschen Mundarten* (Berlin, 1912). Of the Scandinavian languages the Swedish has been most carefully studied in this respect, several journals being devoted to the subject. For the dialects of the Romance languages, consult Gröber, *Grundriss der romanischen Philologie*, vol. i (Strassburg, 1904-06), and Gilliéron and Edmont's *Atlas linguistique de la France* (Paris, 1902-12). Consult also the *Bibliothèque de dialectologie romane* (Hamburg, 1912 et seq.), a periodical devoted to this subject. For Italian, consult Monaci's *Orestomazia italiana dei primi secoli* (3 vols., Turin, 1913). For the Greek dialects: Meister, *Die griechischen*

Dialekte (Göttingen, 1889); Hoffmann, *Die griechischen Dialekte* (Göttingen, 1891-93); Smyth, *Greek Dialects* (Oxford, 1894); Thumb, *Handbuch der griechischen Dialekte* (Heidelberg, 1909); Buck's *Introduction to the Study of Greek Dialects* (Boston, 1910). For the Italian dialects, consult Conway, *Italian Dialects* (Oxford, 1900). See AMERICANISMS; ENGLISH LANGUAGE; and articles on other languages.

D'ALECTIC (Lat. *dialecticus*, Gk. *διαλεκτικός*, *dialektikos*, from *δialektos*, *dialektos*, discourse, dialogue). A philosophic term that was probably first used by Plato to designate the Socratic method of taking up some conception and showing the inadequacy of popular views concerning it, by debating about their deficiencies and inconsistencies; hence the name given it. Aristotle used "dialectic" in the sense of probable reasoning. After this, "dialectic" came to imply a sort of word fence, the art of so using the forms of reasoning as to confound your opponent and "make the worse appear the better cause." Kant used the term to designate that part of his *Critique of Pure Reason* which exposes the fallacies into which one falls who tries in knowledge to transcend the limits of experience. Hegel restored the word to its original Socratic meaning, and called his system dialectical, meaning thereby that it sought to show the insufficiency of the conceptions in ordinary use, and to discover the missing elements,—the process of letting each conception develop its antithesis and then later with its antithesis into a synthesis which harmonizes the two. Dialectic is sometimes used as synonymous with logic.

DIALLAGÉ, d'ál-lá-j (Neo-Lat., from Gk. *διαλλαγή*, *diallagé*, interchange, from *διαλλάσσειν*, *diállassein*, to interchange, from *διά*, *dia*, through + *άλλάσσειν*, *állassein*, to change). A thin foliated or lamellar variety of pyroxene of a green to brown color. It is seldom found crystallized, but usually massive, with a pearly lustre. Its composition is similar to that of *diopside* (calcium magnesium silicate), but it sometimes contains alumina, when it should properly be classed with *augite*. By some authorities it is believed to be an altered *augite*. It is widely distributed, and is found in the early rocks. Certain varieties, especially those possessing a characteristic lustre, have been cut and polished. The name "diallage" is also applied to the mineral *enstatite* and its ferrous variety *bronzeite*.

DIALOGUE (Lat. *dialogus*, Gk. *διάλογος*, *dialogos*, speech, from *διά*, *dia*, through, across + *λόγος*, *logos*, speech, from *λέγειν*, *legein*, to speak). A conversation between two or more persons, implying, however, greater unity of subject and formality than an ordinary conversation. The Socratic dialogue is a conversation in the form of question and answer, so contrived that the person questioned is led himself, to all appearances, to originate the ideas the questioner wishes to bring before him. The dialogues of Plato are philosophical dramas, in which the Socratic method of investigation is brought to bear upon speculative subjects. Among the ancients the dialogue was a favorite form for didactic literature. Aristotle employed it, but in less dramatic form than Plato; he himself always played far the larger rôle in the conversation. Heraclides (q.v.) introduced as the *dramatis personæ* famous men of a bygone time. Cicero commonly chose the Aris-

totelian dialogue form for his philosophical works; his *Lælius* (*De Amicitia*) and his *Cato Maior* (*De Senectute*) are rather Heraclidean. Lucian employs the dialogue for purposes approaching those of the drama. One of Tacitus' works was entitled *Dialogus de Oratoribus*. Of the more eminent modern writers in this form, we may mention Erasmus in Latin; Hutten, Lessing, Herder, Wieland, and Schelling among the Germans; Petrararch, Macchiavelli, Tasso, and Galileo in Italy; Fénelon, Fontanelle, and Voltaire in France; Valdés and Carducci in Spain; and Berkeley, Hurd, and Harris in England. Landor's *Imaginary Conversations* also are a happy effort of this kind. When dialogue is combined with action, we have the drama. On the ancient dialogue, consult: Reid, edition of the *Academica* of Cicero, p. 25 (London, 1885); Hirzel, *Der Dialog* (Leipzig, 1895); Christ, *Geschichte der griechischen Litteratur*, vol. i, pp. 621 (5th ed., Munich, 1908).

DIALOGUE OF DEATH. A religious work by William Bullen, written and published during the London Plague (1664-65).

DIAMAGNETISM (from Gk. *διά*, *dia*, through + *μάγνης*, *magnēs*, magnet, from *Μάγνης*, *Magnēs*, Magnesian, from *Μαγνησία*, *Magnēsia*, a city of Thessaly, in Greece, where magnetic stones abounded). A name given certain magnetic phenomena observed in the case of bismuth and some other substances. If a small piece of bismuth is brought near one pole of a strong magnet, it will be seen to be repelled. This is owing to two things: (1) the magnetic field at the end of the magnet is not uniform, being strong near the magnet and feeble at a distance; (2) the surrounding medium is air. If the field of magnetic force were uniform, there would be neither repulsion nor attraction, the piece of bismuth would simply turn and take up a definite position. Further, Faraday has shown that the question of attraction or repulsion depends not on the body itself, but on its magnetic properties with reference to those of the surrounding mediums. (See MAGNETISM.) Faraday showed that the following substances and a few others were diamagnetic when placed in air: bismuth, antimony, tin, zinc, cadmium, mercury, silver, copper, gold, lead, sulphur, sugar, wood, water, alcohol.

DIAMANTE, dé'a-mán'tá, JUAN BAUTISTA (fl. last half of the seventeenth century). A Spanish dramatist. He was born in Madrid, but at what date we do not know; 1626, 1630, and 1640 all have been suggested with queries, probability pointing to c.1630. In his native city about one-half of the 50 plays written by him and still extant were published in book form (2 vols., 1670 and 1679). His earliest surviving work is the tragedy entitled *El honorador de su padre* (1658), a free rendering of Corneille's *Cid*. Among the other pieces attributed to him *La judía de Toledo* has probably enjoyed the greatest popularity, but modern scholarship deprives him of the chief credit concerning this play by showing that it is probably only a slight reworking of Mira de Mezcua's *La desgraciada Raquel*, with a different name. He was a knight of St. John of Jerusalem and probably, like Calderón, Lope de Vega, and several other celebrated poets, spent the closing years of his life in the midst of his brotherhood. The date of his death is not known, but we have no mention of him as a

living author after 1684. Consult: H. A. Rennert, "Mira de Mesuca et 'La Judía de Toledo,'" in *Revue Hispanique*, vol. vii (Paris, 1900); A. L. A. Fée, *Études sur l'ancien théâtre espagnol: Les trois Cid* (ib., 1873); and for four of Diamante's plays, vol. xlix of the *Biblioteca de autores españoles*.

DIAMANTINA, dē'-mān-tē'nā. An episcopal city in the State of Minas Geraes, Brazil, situated 146 miles northeast of Ouro Preto and 3710 feet above sea level (Map: Brazil, J 7). It has an episcopal seminary and numerous public buildings. It is the centre of a diamond-producing district, and has diamond-cutting and goldsmiths' establishments, as well as cotton and leather manufactures, and a trade in diamonds amounting almost to \$1,000,000 annually. Diamantina was founded in 1730. It formerly bore the name Tejuco. Pop., 1890, 17,980; 1905, est., 14,000.

DIA'MENIA. A genus of elapine venomous snakes of Australia. See GRAY SNAKE.

DIAMETER (Lat. *diametros*, from Gk. *diameterpos*, diameter, from *dia*, *dia*, through + *metros*, *metron*, measure). A diameter of a conic section (q.v.) is any chord which connects the points of contact of parallel tangents. In the circle, ellipse, and hyperbola all diameters pass through the centre (see CURVE) and are bisected by it. Only the circle has all diameters equal, and each bisects the chords perpendicular to it. In the ellipse only the diameters called the minor and major axis bisect the chords perpendicular to them. In the parabola all diameters are parallel to the axis. (For conjugate diameters, see CONJUGATE.) Certain solid bodies also have diameters. In the sphere and the ellipsoid the lines passing through the centre are called diameters and are bisected by the centre. See AXIS.

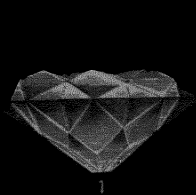
DIA'MOND (OF, Fr. *diamant*, It. Sp. *diamante*, from Lat. *adamas*, adamant, diamond, from Gk. *adámas*, *adamas*, adamant, from *á*, a priv. + *damān*, *daman*, Skt. *dam*, to subdue). A precious stone composed of pure carbon, remarkable for hardness, lustre, and flash of color. It crystallizes in the isometric system, usually in octahedrons, or in combinations of several forms, including the octahedron, cube, rhombic dodecahedron, trisoctahedron, and hexoctahedron; the faces and edges of the crystals frequently are curved. It has a very perfect cleavage by which the primary form of the octahedron may be derived. The diamond is not acted upon by acids or alkalis, but if heated to a high temperature in the presence of oxygen it burns to carbon dioxide. Its brilliant lustre and display of prismatic colors are due to the property of refracting and dispersing the light rays, a property possessed in the highest degree by colorless stones. The specific gravity of the diamond is 3.52; its hardness, which is assumed to be 10 on the mineral scale, exceeds that of any other known substance. By friction it becomes phosphorescent and positively electric. The diamond has a great variety of natural colorings; white, yellow, and brown specimens are the most common, but pure white and fine shades of brown and yellow are quite rare and command high prices. Red in rich, deep tints is perhaps the most prized of all colors, while blue and green are also highly valued owing to their beauty and rarity. The amorphous steel-gray to black diamond, known as "bort" or "carbonado," which is unsuitable for gems, is ex-

tensively used on the cutting edges of drills for tunneling and prospecting.

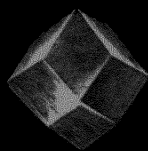
Occurrence. Previous to the discovery of the Brazilian mines in 1727, diamonds were found chiefly in India and Borneo. In India they have been obtained near Kadapa, Karnul, and Bellari in Madras Presidency; near Nagpur, in the Central Provinces; and at Panna, in Bundelkhand. The famous Golconda was a market in Madras Presidency where the diamonds were collected from the mines. Formerly the diamond-mining industry gave employment to a large number of people, but, owing to the gradual exhaustion of the deposits and the crude methods of working, it has steadily declined. The diamond mines of Borneo, which supply about 3000 carats annually, are located in the western part of the island near Pontianak. The Brazilian diamonds come from a small district within the states of Bahia, Minas Geraes, Goyaz, and Matto Grosso, being found for the most part in placers. Diamantina, Bagagem, and Abaete in Minas Geraes are the principal localities for gem stones, and Lençoes, Sincora, and Santo Ignacio for carbonados. The alluvial deposits consist of water-worn quartz pebbles, and ferruginous clay, carrying rutile, hematite, ilmenite, and other minerals besides the diamonds. In one locality (Bagagem) the stones are found in a weathered, decomposed phyllite; they are also known to occur elsewhere in conglomerate. The total output of the Brazilian mines up to the year 1899 has been estimated by one authority at 13,105,000 carats. The most valuable specimen from this source is the "Southern Star," found in 1854, which weighed 254 carats in the rough and 124 carats after cutting.

The South African diamond fields yield about 98 per cent of the total product. Their discovery in 1867 came from the purchase of a stone that had been picked up by the children of a Boer farmer, and which was subsequently sold in Paris for \$2500. The diamonds are found in both river diggings and dry diggings. River diggings occur along the Vaal River from Potchefstroom down to the confluence with the Orange and up the latter river as far as Hope-town. Mining is conducted in a similar manner to gold washing, the operations usually being on a limited scale. The dry diggings are in Griqualand West, on the borders of the Orange River Colony, about 640 miles northeast of Cape Town. They comprise a number of small areas of circular or oval form, ranging in diameter up to ¼ of a mile. They are worked by a single company, the De Beers Consolidated Mines, Limited. The mines are opened on a large scale and yield enormous profits. It is stated that the output from 1867 to 1897 was over 33,000,000 carats, or about 7½ tons, valued after cutting at \$450,000,000. Quite recently another diamond field has been opened in Transvaal, near Pretoria. The largest mine is the Premier, which has been proved to be very rich. The South African diamonds in the average do not equal the Brazilian for purity, although some of the most valuable stones, remarkable for quality as well as for size, have been found in these mines. Other countries where diamonds are known to occur are the United States, British Guiana, Russia, China, Sumatra, and Australia. In the United States there are no deposits, so far as discovered, of sufficient value to warrant mining operations,

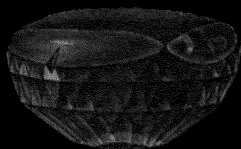
DIAMONDS



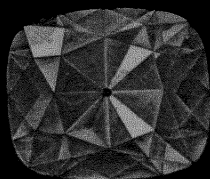
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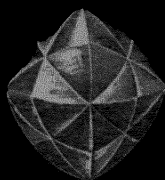
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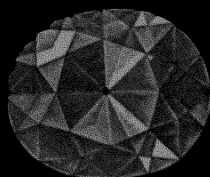
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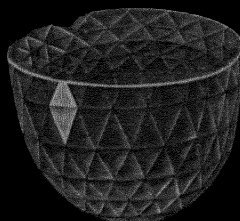
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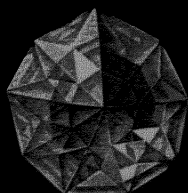
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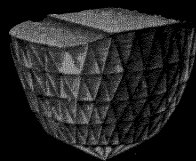
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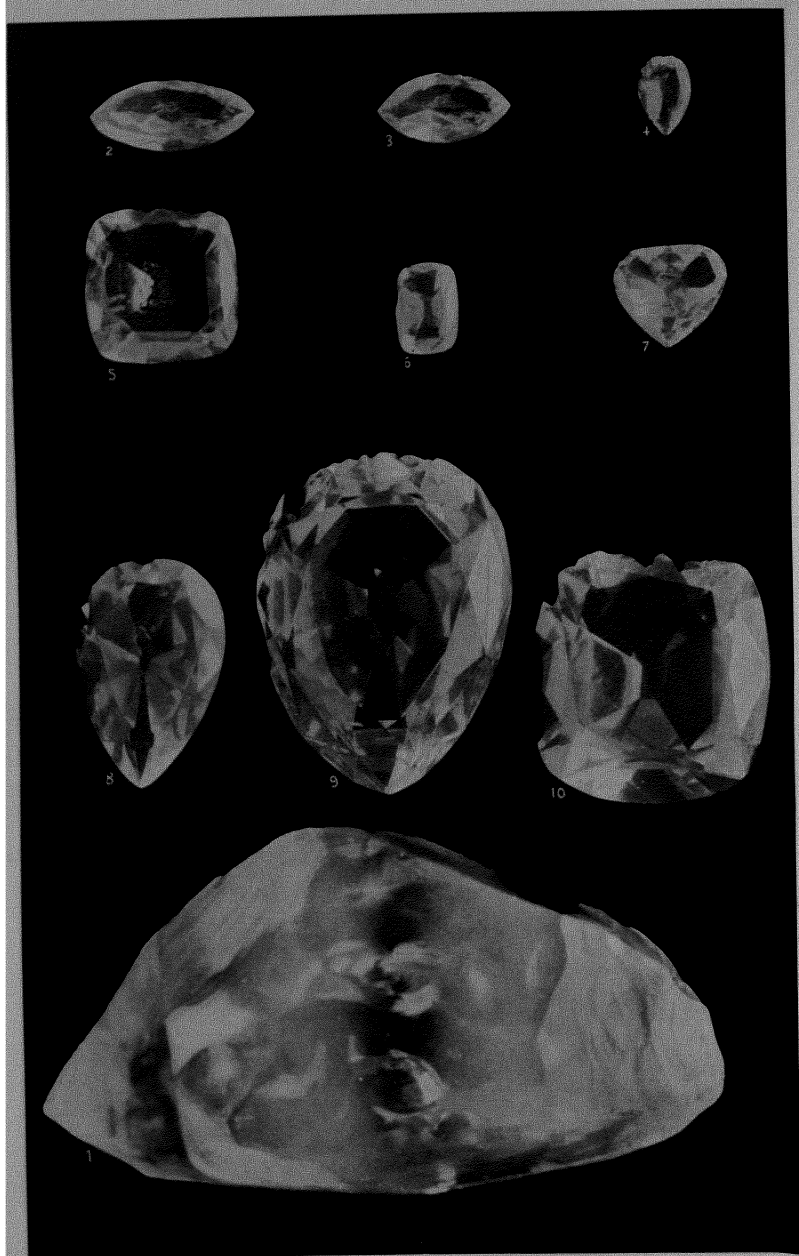


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REMARKABLE DIAMONDS.

1 and 4. SOUTHERN STAR. 2 and 5. NATURAL CRYSTAL FORMS. 3 and 6. KOH-I-NUR—Old and new cuttings.
7. GREEN DIAMOND, in Green Vault, at Dresden. 8. GREAT MOGUL. 9. SANCY. 10. FLORENTINE.

DIAMONDS



THE CULLINAN DIAMOND

No. 1. CULLINAN DIAMOND. Stone before cutting (natural size).
 Nos. 2 to 10. THE NINE LARGEST STONES WHICH WERE CUT FROM No. 1 (natural size).
 No. 9. THE PENDANT-SHAPED BRILLIANT KNOWN AS CULLINAN I WEIGHING 516½ KARATS. This is

mier mine near Pretoria, Transvaal. The stone—called the Cullinan diamond from the name of its finder—weighed 3024½ carats, or 1.37 pounds, and measured 4 inches by 2.5 inches by 1.25 inches. It shows five cleavage planes, indicating that it is only a portion of a large crystal. The color is reputed to be the purest of any of the large stones. Its value has been estimated at from \$2,500,000 to \$5,000,000. This diamond was purchased by an English syndicate and has been cut into nine stones, which were presented in 1908 to King Edward VII to be placed among the English crown jewels. The largest of these, a pendent-shaped brilliant weighing 516½ carats, is mounted in a removable setting in the sceptre. It is known as Cullinan I. The second largest stone, Cullinan II, weighs 309 ½ carats and is mounted in the crown of England.

Diamond Cutting. The art of diamond cutting was not developed until the middle of the fifteenth century, although crude methods of polishing were in use long before that time. About 1470 a guild of lapidaries was established at Bruges, under the direction of Louis de Berquem, who is thought to have been the first to devise a regular plan for the arrangement of facets so as to increase the color effects in gems. Other guilds were soon founded in Antwerp and Amsterdam, and these cities rapidly gained preëminence in the industry—a position they still maintain.

In diamond cutting the operations are performed with the single object of producing the most valuable gem from a crude stone. The apparatus used is simple, but its manipulation requires both skill and experience. In the first place the stone must be examined carefully to determine its shape, color, and the possible pres-

low upon the back of the blade is sufficient to accomplish the clearing. The next process (bruting) brings out the facets. Two rough stones, fixed at the end of holders, are held in either hand of the operator, who presses them against each other, at the same time giving them a rubbing motion. The friction wears away the surfaces gradually until they coincide in position to two of the facets. The diamonds are then cemented in new positions, and the operation is continued. The waste particles of dust are collected and used in the final process of polishing. For this the apparatus consists of a small disk of spongy cast-iron, turning on a vertical spindle at a speed of 2000 to 3000 revolutions per minute. The stone, imbedded in the apex of a metallic (lead-tin) cone, is held by a clamp against the surface of the disk, which is smeared from time to time with a mixture of olive oil and diamond dust. This operation requires constant attention, as the stone may be permanently damaged by overheating.

Of the several forms in which diamonds are cut, the *brilliant* is the favorite. It is derived from the fundamental octahedron and requires, when perfect, 58 facets. In the middle is an octagonal facet called the "table," which is surrounded by 32 smaller facets, reaching to the line of union (girdle) between the upper and lower portions. On the lower portion there are 24 facets symmetrically arranged around the "culet." The *rose* form is used for thin stones. It consists of a number of triangular facets, the apices of which meet in the crown, and whose bases are supported by a second row of facets extending to the girdle. The lower part is perfectly flat. In the *briolette* the stone is cut into triangular facets, but the form is pear-shaped and there is no girdle.

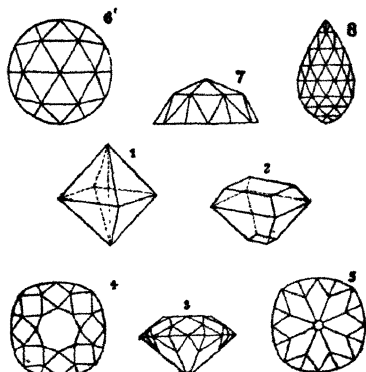
Bibliography. Kunz, *Gems and Precious Stones* (New York, 1900); Streeter, *Precious Stones and Gems* (London, 1894); id., *The Great Diamonds of the World* (ib., 1882); Church, *Precious Stones* (ib., 1883); Bauer, *Edelsteinkunde* (Leipzig, 1896); Cattelle, *Precious Stones* (Philadelphia, 1903); De Launay, *Les diamants du Cap* (Paris, 1897); Beaumont, *Report on a Journey to the Diamond Fields of Minas Geraes* (London, 1899); Claremont, "The Cutting and Polishing of Precious Stones," *The Mineral Industry*, vol. viii (New York, 1900); Williams, *Diamond Mines of South Africa* (2 vols., New York, new ed., 1905); Herbert Smith, *Gem-Stones* (London, 1913). Consult also Claremont, in *The Mineral Industry*, vol. vii (New York, 1890). See GEMS; CARBON.

DIAMOND, CAPE. See CAPE DIAMOND.

DIAMOND-BACK. See TERRAPIN.

DIAMOND BEETLE. The common name of a South American weevil (*Entimus imperialis*), so named because of its brilliant coloration. It is an inch or more in length, with a black surface covered with punctures lined with oval scales that reflect such a brilliant green that the entire elytra appear green instead of black. The color changes with varying reflected light and is purely optical and not due at all to any pigment.

DIAMOND BIRD (so called from the peculiar marks on the plumage). A small insectivorous bird of the Australian genus *Pardolotus*, of uncertain affinities, but allied to the honey suckers (q.v.) and by some placed in the Dicaeidae. (See DICAUM). The commonest species is the well-known *Pardolotus affinis*. "It



DIAMOND CUTTING.

Figs. 1-5—the Brilliant: 1 and 2, fundamental form; 3, 4, 5, side, top, and back views of the cutting. Figs. 6 and 7, top and side views of the Rose cutting. Fig. 8, view of the Briolette cutting.

ence of flaws, as these features will govern the operation of cutting. If the shape is such that it cannot be reduced readily to one of the usual forms, the stone may be divided into two or more parts by taking advantage of the natural cleavage. The diamond is cemented to a wooden holder, and a steel blade is applied in a direction parallel to an octahedral face. A sharp

would be in vain," says Wheelwright, in *Bush Wanderings* (London, 1865), "to attempt to do justice . . . to the varied and beautiful plumage of this handsome little bird. The general color is ashy gray and white, but spotted and spangled all over with red, yellow, orange, and black, and the tail coverts dark red." It is migratory, frequent in summer the open gum forests of southern Australia, especially about the honeysuckles and other tree flowers; has a loud, sweet call note; and breeds in holes in old logs and sometimes in the ground. Consult Campbell, *Nests and Eggs of Australian Birds* (Sheffield, 1900).

DIAMOND CUTTING. See DIAMOND; LAPIDARY WORK.

DIAMOND NECKLACE, THE AFFAIR OF THE. A celebrated scandal involving the royal family of France in the years preceding the outbreak of the French Revolution. The affair has remained a puzzling incident in the history of the French court, in spite of time and a fairly generous literature. It revolves about a magnificent collar of diamonds which Messrs. Boehmer and Bassange, jewelers to the French court, had brought together at vast expense for Madame du Barry, mistress of Louis XV. The King, however, died before the necklace was completed. Towards the end of 1784 Boehmer and Bassange attempted to induce Marie Antoinette to purchase the necklace, through the efforts of an intermediary, a certain Countess Lamotte-Valois, a friend of the Queen. For some time before this the Countess had been acting as the agent in a remarkable intrigue revolving about Cardinal Rohan, Grand Almoner of France and Bishop of Strassburg, who, previous to 1774, had been Ambassador at Vienna and had been recalled in disgrace. Hoping to regain power through the favor of the Queen, this good-natured libertine, generous, vain, and easily imposed upon, fell a victim to the cunning of the Countess, who persuaded him that Marie Antoinette was inclined to look with favor upon him. A remarkable correspondence ensued, in which Rohan's hopes were fed by letters purporting to come from the Queen, but in reality written by the Countess. In July, 1784, the Cardinal was made to believe that the Queen had consented to give him a private audience. A woman of the streets, a certain Mademoiselle Oliva, in form and general cast of features remarkably resembling Marie Antoinette, was hired to impersonate the Queen. A brief interview in the park of Versailles at midnight served to keep up the prelate's ardor, and his gratitude showed itself in substantial favors to the Countess.

When Boehmer and Bassange sought her services with the Queen, the Countess probably conceived the idea of uniting the two enterprises into one profitable undertaking. In January, 1785, she informed Bassange that the Queen was willing to purchase the collar, but she made it a condition that the negotiations must be carried on through a third person. Rohan was designated as the one from whom the jewelers were to take their sureties as to payment. The Cardinal, who had been persuaded that his services in the matter would insure his success with the Queen, agreed to pay 1,600,000 livres for the necklace in four installments, beginning with August 1. On January 29 the jewelers signed a contract of sale, and on the 31st the instrument was returned to them signed "Marie Antoinette de France." This is generally brought forward as a proof against the genuineness of the signa-

ture, inasmuch as the Queen was accustomed to sign herself "Marie Antoinette d'Autriche." On February 1, at Versailles, in the presence of Rohan, the Countess delivered a casket containing the necklace to Desclaux, an attendant of the Queen, after the smaller stones and pendants had been removed for the purpose of securing the money necessary for the payment of the first installment. This is the version given by the Countess in her *Memoirs* and is accepted by Michelet. Whether the account be true or false, nothing more was ever seen of the collar as a whole. The failure of Rohan to pay on August 1 led the jewelers to complain to Breteuil, Minister of Police, who, as an enemy of Rohan, rejoiced exceedingly and informed the Queen of the scandalous reports which were being circulated in Paris concerning the Cardinal and herself. The affair was quickly brought to the notice of the King, upon whom it produced an extremely painful impression. On August 15, Ascension Day, the Cardinal Rohan, in full pontifical robes, was arrested in the midst of the court and sent to the Bastille. The Countess was arrested three days later, and this was followed by the imprisonment of the wonder-working magician Cagliostro (q.v.), who had been Rohan's chief adviser in the affair, as well as of Lamotte's lover. The Parlement of Paris was charged with the trial of the case, which, however, was conducted in a half-hearted manner, for it would seem that the King, fearing the odium which a full revelation might bring upon the Queen, prevented in a large measure an impartial investigation. On May 3, the Countess was found guilty of the theft of the necklace and was sentenced to be scourged, branded, and imprisoned for life. Her husband, who had succeeded in avoiding arrest, was condemned to the galleys as her accomplice. Rohan and Cagliostro were found guilty of criminal intent, and the Cardinal was declared an innocent dupe. The Countess succeeded in escaping from prison, and took up her residence in London, where she died miserably in 1791. Consult Funck-Bretano, *The Diamond Necklace* (New York, 1901).

DIAMOND RATTLESNAKE. See RATTLE-SNAKE.

DIAMOND SNAKE (so called from the diamond-shaped marks on its skin). 1. An Australian python, or rock snake (*Python spilotis*), which was long regarded as one of the two species of the genus *Morelia*, the other being the so-called carpet snake (*Morelia variegata*). The two are now considered varieties of a single highly variable species of true python, the richly colored variety called diamond snake being especially abundant in Victoria, while the so-called carpet snake is widely scattered throughout Australia. It is about 6 feet long, of rather heavy form, and inhabits nearly every region that offers shelter, though stony ridges supplied with trees and well watered seem to be its favorite haunt. Its food consists of small mammals, birds, and birds' eggs and young, and it frequently raids the poultry yards of the farmers. Though able to bite severely when irritated, it is not poisonous. It makes a sort of nest of dry grass or other soft materials within a hollow log, or similar place, and lays its eggs in a pile, which it guards. The colors vary from glossy black with bright yellow spots, one on each scale and forming an arrangement of lozenge-shaped markings, with the abdomen yellow and black, as in the true diamond snake, to the greenish,

irregularly marked coloration of the carpet variety.

2. In Tasmania, a local venomous serpent (*Holoccephalus superbus*). See DEATH ADDER.

DIAMOND STATE, THE. Delaware. See STATES, POPULAR NAMES OF.

DIAMOND WEDDING. See WEDDING ANNIVERSARIES.

DIANA. A Roman goddess, identified by the Romans with the Greek Artemis. According to the common myths, Artemis, as daughter of Zeus and Leto, was the twin sister of Apollo and was therefore worshiped with him at Delos, Miletus, and many other places. There seems good reason for believing that this connection with Apollo is one of the later developments of the worship of Artemis. It exercised in time a powerful influence on literature, art, and religion. To this aspect of Artemis belongs the conception of her virgin purity—a quality which she was supposed to require strictly from others, especially from her priests and priestesses. From the fifth century B.C. Artemis is frequently identified by the poets with Selene, the moon goddess, and with Hecate. The Roman Diana, it may be noted here, was probably originally a deity of the sky, of light (her name would seem to be connected with the Latin adjective *dius*, 'heavenly, divine,' which yields the noun *dum*, 'heaven,' seen in the phrase *sub dio* 'under the skies'). Still later Artemis was connected with numerous foreign deities, in whose worship the Greeks thought they found kindred rites. Such were the Persian Anaitis from the Oxus, the Thracian Bendis, the Cretan Britomartis or Dictynna, the goddess of the Tauric Chersonese (the Crimea), who was worshiped with human sacrifices (see IPHIGENIA, ORESTES), and, above all, the great nature goddess who was the chief deity of Ephesus, where her temple was the wonder of the world. (See DIANA, TEMPLE OF.) In archaic art Artemis often appears as winged and grasping two lions or other wild animals, the so-called "Persian Artemis"; but later the prevailing type is that of the huntress, with high-girded tunic, armed with bow and quiver, and sometimes grasping a deer. She also appears in long, flowing robes. As Selene, she wears the crescent moon on her forehead. The Romans identified with the Greek Artemis their Italian goddess Diana, who was also a nature goddess. As Noctiluca ('Giving Light by Night'), she had a shrine on the Palatine in which lights burned throughout the night. Her worship was rapidly Hellenized, but the native cult in the grove at Nemi (q.v.) was long preserved. The distinguishing feature of this sanctuary was that the priest must win his position by killing his predecessor; as a result of this requirement this place was in historic times filled with runaway slaves. Consult Frazer, *Golden Bough* (parts i-iii, 2d ed., London, 1911). This custom was perhaps a survival from a time when human sacrifices were offered to Diana. At Nemi Diana was worshiped together with a deity called Virbius, who was identified with Hippolytus (q.v.), the son of Theseus.

The worship of Diana was early transferred from Latium to Rome: her great temple on the Aventine was built, so tradition said, by the Latins and the Romans conjointly. For the ceremonies connected with this temple and for the special reverence in which Diana was held by the plebeians at Rome, consult Fowler, *Roman Festivals* (London, 1899).

The conception of this goddess is singularly devoid of unity, and there is much in the legends and cults which suggests the union under a common name of originally diverse local divinities. Even the Greek name is still unexplained. In many phases of her cult Artemis appears as a nature goddess, as bringing fruitfulness, and as worshiped on mountains and in meadows or sacred groves, or even as connected with the swamps and streams or with husbandry. More prominent in the literature and art is the conception of Artemis as ruler and guardian of the animal world, not merely of deer, boar, and other wild creatures, but also of domestic cattle, for the bull is one of her chosen victims, and the bucolic poetry of the shepherds is said to have arisen at her festivals. Artemis (sometimes directly identified with Eileithyia) was supposed to protect women in childbirth; she also watched over the growth of children. To her they offered their hair on attaining maturity, and to her maidens, before marriage, dedicated their toys, dolls, and garments. But Artemis does not always appear as the friendly deity. She is also a goddess of death, especially in the case of women, whom she slays with her gentle arrows as Apollo does men. In this aspect she demanded human sacrifices, and there are numerous traces of such bloody rites in such Greek legends as that of Iphigenia and in later symbolism. See BRAURONIA; MYTH; MYTHOLOGY. (Consult: Farnell, *Cults of the Greek States*, vol. ii (Oxford, 1896); Fairbanks, *Greek Religion* (New York, 1910); Wissowa, *Religion und Kultus der Römer* (2d ed., Munich, 1912).)

DIANA, TEMPLE OF. A magnificent structure at Ephesus, built at the public charge and regarded as one of the seven wonders of the world. From the eighth century B.C. the site was the seat of the worship of the Asiatic nature goddess, whom the Greeks identified with Artemis (see DIANA); legend told of many temples burned before the Ephesians, at the close of the seventh or the beginning of the sixth century B.C., began the erection of a series of famous temples to Artemis. Of the first of these Chersiphron, of Cnossus, was the chief architect, and the work was continued by his son Metagenes. In the time of Cræsus (q.v.) a much larger temple, known now as the Archaic Temple or the Cræsus Temple, was begun (c.550 B.C.). This temple was laid bare by Wood in 1869-74. (See below.) It seems to have had two rows of eight columns across the front and the rear, and two rows of 20 columns on each side (in this statement the corner columns have been counted twice). According to Pliny, 120 years elapsed before it was completed, but this statement has been challenged, on the ground that the sculptured bases of the columns and the frieze and cornice belong to the same era, the time of King Cræsus, who contributed largely to the building. This temple was burned in 356 B.C. by a certain Herostratus, who wished to immortalize himself; the myth mongers asserted that the fire occurred on the night when Alexander the Great was born. The fire seems to have destroyed only a part of the temple, and its reconstruction was at once begun, under the direction of Dinocrates (q.v.). It was this structure that came to be regarded as one of the wonders of the world; its columns, of great diameter, were over 60 feet high. This temple, known as the Hellenistic Temple, seems to have been plundered and perhaps burned by the Goths in 262 A.D. The

temple was, however, restored, and lasted till Theodosius (q.v.) closed by an edict the pagan temples. Its stones were then used in the building of a great cathedral of St. John on a hill near by. Of these structures, some remains were found by J. T. Wood, who conducted excavations at Ephesus from 1863 to 1874, though not till Dec. 31, 1869, was the true site determined. In 1904-05 D. G. Hogarth, under commission from the British Museum, reexamined the site. Beneath Wood's earliest temple he found remains of three earlier shrines and a rich array of offerings belonging to the earliest sanctuary; these offerings, which included many fine objects of Hellenic workmanship, among them the earliest-known coins of electrum (q.v.), prove that here was a sanctuary on this site long before the time of Cræsus. Sculptures and fragments of the architecture of the various temples are now in the British Museum; so too is part of the treasure found by Hogarth. In the temple were many fine works of art, e.g., statues of Amazons by Phidias, Polyclitus, Cresilas, and Phradmon, and a painting by Apelles which represented Alexander the Great as holding a thunderbolt. The temple also had a famous right of asylum, which continued down at least to the days of Tiberius. Consult: Wood, *Discoveries at Ephesus* (London, 1877); Ferguson, "The Temple of Diana at Ephesus," in *Transactions of Royal Institute of British Architects* (ib., 1883); Murray, "Sculptured Columns of the Temple of Diana at Ephesus," in *Journal of the Royal Institute of British Architects* (ib., 1895); Hogarth, *Excavations at Ephesus: The Archaic Artemisia* (2 vols., ib., 1908).

DIANA ENAMORADA, *dê-nâ a-nâ-mô-râ-nâ* (Sp., Enamored Diana). An extremely popular pastoral romance, by Jorge de Montemayor, first printed at Valencia in 1542, left incomplete, and finished in 1564 by Antonio Perez, of Salamanca.

DIANA MONKEY. A well-known monkey (*Cercopithecus*, or *Lanopygia*, *diana*) of the west coast of Africa, which takes its name from a crescent of upstanding white hair on the forehead. Its general color is black, with the ridge of the back and the rump bay color, sharply defined and strikingly set off by the pure white of all the fore parts, including a long beard. Like its congener, the Mona monkey, this guenon (q.v.) is gentle and easily tamed when young, but it is rarely seen in menageries on account of its delicacy. See *PLATE OF MONKEYS OF THE OLD WORLD*.

DIANE DE FRANCE, *dê-an' de frâns*, *Duchesse de Montmorency et d'Angoulême* (1538-1619). A French lady, born in Piedmont. Her father was Henry II of France and her mother, Philippa Duca, a low-born Piedmontese of great beauty, whom he met during the campaign in Italy (1537). Diane was educated in France and solemnly legitimated and always afterward signed herself Diane de France. She was the favorite daughter of her father and was married with much pomp to Orazio Farnese, Duc de Castro, second son of the Duke of Parma (1553). Six months later this prince was killed by the Spanish at Hesdin. Four years afterward Diane was married to François de Montmorency. Upon his death she declined to enter again into matrimony and turned her attention to pious deeds and the delicate rôle of mediator in the differences between the members of her family. Thus she brought about the important reconcili-

ation of Henry III with Henry of Navarre. Her gentleness and real goodness, in a time so corrupt, made her honored by all. She is one of the most agreeable figures in that period of French history.

DIANE DE POITIERS, *dê-an' de pwâ'tyâ'* (1499-1566). Duchess of Valentinois and mistress of Henry II of France. When but 13 years of age, she was married to the Count of Maulevrier, Grand Seneschal of Normandy, by whom she had two daughters. She was a widow at 32, and some seven years later became the mistress of Henry (then dauphin), who was but 18 years old. At that time the Duchesse d'Etampes was the favorite of Francis I, and the two women ruled the court; but when Henry became King, Diane was the real ruler and at once sent her rival into exile. Notwithstanding the beauty and the rights of his wife, Catharine de' Medici, Henry was controlled by Diane during his whole reign. At the death of Henry, however, Catharine de' Medici recovered her position and pursued her rival with considerable vindictiveness. Diane retired into obscurity, and died in 1566.

DIANTUM. See *DENIA*.

DIANO MARINA, *dê-â-nô mâ-rê-nâ*. A winter resort, on the Ligurian Sea, in the Province of Porto Maurizio, northwest Italy, 20 miles east of San Remo and just adjoining the Riviera (Map: Italy, C 4). It was partly destroyed by the earthquake of February, 1887, but has since been rebuilt. Its chief trade is in olive oil. Pop. (commune), 1901, 1859: 1911, 1929.

DIANOBA, *dê-â-nô-râ*. The wife of Gilberto in the fifth story of the tenth day in Boccaccio's *Decamerone*. The story is the source of Chaucer's *Franklyn's Tale*.

DIANTHUS. See *CARNATION*; *PINK*.

DIAPASOŒN (Lat., octave, from Gk. *διαπασών*, *diapasōn*, through all, sc. *χορδών*, *chor-dōn*, chords). A term in music by which the ancient Greeks designated the octave. In modern music diapason is used to denote the range or compass of the voice or of an instrument. The French used the term as equivalent to "pitch." The diapason normal is the standard or international pitch which is now almost universally adopted. The French Academy, in 1859, fixed the number of vibrations of the *a'* at 870 (or 435 double vibrations) per second. Diapason is also the English name given to certain stops of pipes in the organ, commonly of eight-foot pitch, which are considered the fundamental stops, of which there are generally two—a stopped diapason and an open diapason—on each manual. See *ORGAN*.

DIAPHE (OF. *diapre*, *diaspre*, It. *diaspro*, from Lat. *jaspis*, Gk. *ἱάσπρις*, *iaspris*, jasper, possibly of Semitic origin; cf. Heb. *yashpheh*, Ar. *yashb*, *yasf*, *yashb*, jasper). A term in decoration derived from the early mediæval practice of incrusting jewels (jasper) in metal work, filigree, and even textile fabrics. It is now used to designate any all-over patterning in which an ornamental unit is repeated or inclosed in each mesh of a network of intersecting lines. The more common types of diaper consist of two systems of intersecting lines forming a quarry (q.v.) of diamond-shaped meshes with a simple flower or rosette or like motive repeated in each. The origin of diaper patterning is to be sought in the basketry and grass weaving of primitive tribes. So soon as decorative patterns begin to be generated by the interweaving of grasses of

different colors, zigzags and quarries begin to appear in primitive design, followed by quarries with central ornaments forming diapers. Patterns of this sort have continued to be used in the textile art of all ages. They early passed from textile art to other fields of design. In the Middle Ages, especially, diapers abounded, both in Christian and Mohammedan art. The shafts of Romanesque and Norman columns (e.g., Saint-Denis in France) and in Gothic art, especially in England, the spandrels of arcades (e.g., Westminster Abbey) were often adorned with diapers in very flat relief. The Moslem artists of the Middle Ages, especially those of Spain, developed extraordinary systems of intricate surface decoration of walls in color, in which diapers played an important part; the framework or mesh, however, being composed, not of straight lines, but of a species of vine pattern forming meshes of complex shapes in which appeared portions of a running ornament on a lower plane, as in the Alhambra (q.v.). (See MOHAMMEDAN ART.) Diaper patterns are common in modern art on wall papers, carpets, oilcloths, mosaic and pavement decorations, and textile fabrics. In heraldry the term is applied to fields and charges, relieved by arabesque and geometrical patterns. These patterns were generally of a darker shade of the same tincture. This, being merely an ornamental device, not affecting the heraldic value of the objects to which it was applied, was generally left to the fancy of the printer.

DIAPHANOSCOPE (Gk. *διαφανής*, *diaphanēs*, transparent + *σκοπεῖν*, *skopein*, to see). A dark box, constructed for exhibiting transparent photographs or other pictures. It may or may not be furnished with a lens. The photograph, which is generally a glass positive, is placed at a distance from the eye equivalent to the focal length of the lens with which the original picture was made.

DIAPHORESIS (Lat., from Gk. *διαφύρεσις*, perspiration, from *διαφέρειν*, *diapherein*, to carry off, from *δια*, *dia*, through + *φέρειν*, *pherein*, to carry, frequentative of *φέρειν*, *pherein*, to bear). The excretion of sweat or perspiration, whether perceptible or not. The term is generally used to denote the excessive perspiration caused by certain drugs called diaphoretics (q.v.) or sudorifics.

DIAPHORETICS (Gk. *διαφορητικά*, *diaphoretika*, promoting perspiration, from *διαφέρειν*, *diapherein*, to carry off). Remedies used to excite the secretions of the skin. When acting very powerfully, they are called sudorifics. The simplest diaphoretic agents are baths, which may be either warm baths of water or vapor baths, and may be either simple or medicated. (See BATH.) The most powerful of all, however, as regards inducing perspiration, is probably the so-called Turkish bath, which consists essentially in the use of air heated to a temperature of 140° F., or even more. Diaphoretic drugs may act either by stimulating the sweat centres in the spinal cord, or the nerves proceeding from them to the glands, or on the terminations of these nerves in the glands; or they may stimulate the glandular cells directly. The following substances, used internally, are powerful diaphoretics: antimony, Dover's powder (ipecacuanha and opium), ammonia, and the carbonate, or acetate, of ammonia (spirit of Mindererus), sweet spirits of nitre, pilocarpine, camphor, and alcohol.

DIAPHRAGM, *dā'-frām* (Lat., *diaphragma*, Gk. *διάφραγμα*, partition, midriff, from *διαφραγνέω*, *diaphragynēai*, to barricade, from *δια*, *dia*, through + *φραγνέω*, *phragynēai*, to fence in). A thin musculo-fibrous partition separating the cavity of the thorax from that of the abdomen. It is roughly elliptical, with the longest diameter from side to side and almost horizontal in its anterior part, while the posterior portion is nearly vertical. The diaphragm is attached in front to the ensiform cartilage of the breast-bone (sternum) and laterally to the inner surface of the cartilages and bony parts of the six or seven lower ribs; posteriorly the attachment is to two aponeurotic arches on each side (*ligamentum arcuatum externum and internum*), and to the second, third, and fourth lumbar vertebrae by means of firm fibrous tendons (the *crura* of the diaphragm), which terminate above in large fleshy bellies. The central portion of the diaphragm is tendinous and shaped like a trefoil leaf, the muscular fibres radiating from this to the points of attachment. There are three large and several smaller openings in the diaphragm. Through the former pass the abdominal aorta, the vena azygos major, the thoracic duct, the oesophagus, pneumogastric nerves, and vena cava. The diaphragm is convex above and is in relation with the pleurae of the lungs and pericardium; while its concave dome is invested by the peritoneal lining of the abdomen. During respiration the height of the diaphragm constantly changes; it descends during inspiration and thus increases the capacity of the thorax, so that air rushes in to fill the vacuum formed. This contraction of the diaphragm also raises the ribs and widens the chest laterally. In expiration the diaphragm returns to its former position. The descent of the diaphragm encroaches upon the abdomen and lessens its capacity. In all expulsive acts the diaphragm by its contractions gives increased power to the effort and is accordingly an important factor in sneezing, coughing, laughing, and crying, as well as in the expulsion of urine and feces. Hiccoughing is due to spasmodic contraction of the diaphragm.

DIAPHRAGM. A partition with a hole in it, employed not only in landscape and portrait lenses for photography, but also in telescopes, microscopes, and other optical instruments, for the purpose of cutting off the superfluous rays of light, and producing greater intensity or sharpness of the image by decreasing the amount of spherical aberration. (See ABERRATION, SPHERICAL.) The diaphragm only permits those rays to pass which go through the central portion of the lens. The aberration of these rays is much less than those which pass through the lens nearer its circumference. With a photographic lens the diameter of the diaphragm or stop is usually stated in terms of its focal length, as $\frac{f}{8}$, $\frac{f}{16}$, $\frac{f}{32}$, $\frac{f}{64}$.

DIARBEEKI, *dā-ār-bēk'ēr*, or **DIARBEEK**, *dā-ār-bēk'ēr* (the land of Bekir). A town of Asiatic Turkey, capital of a vilayet of the same name, situated near the right bank of the Tigris, from which it is separated by extensive gardens (Map: Turkey in Asia, J 4). It is circular in shape, and is surrounded by high, strong walls, flanked with towers and pierced by four gates. The streets are dirty, and the houses for the most part are built of rough stone, plastered with a composition of mud and straw, but some of the better class are of black basalt. It has

over 50 mosques and several Christian churches. Extensive manufactures of silk, cotton, and other goods were at one time carried on at Diarbekir, and the trade between Aleppo and Bagdad contributed greatly to the importance of the town, but the manufactures and trade have now greatly declined. Its present manufactures consist of red and yellow morocco, silk, and copper ware. The region environing the city is rich in minerals, especially copper. Diarbekir occupies the site of the ancient Amida, which was a place of importance in the reign of Constantius, by whom it was strengthened and enlarged. In this reign it was taken by the Persians, from whom it was again captured by the Romans; but in 502 the Persians once more became masters. After many vicissitudes it passed into the hands of Sultan Selim in 1515. Its population is estimated at 38,000, chiefly Mohammedans.

DIARRHŒA, *dī'ar-rē'a* (Lat. *diarrhœa*, from Gk. *διάρρœia*, *diarrhœia*, a flowing through, from *διάρρœin*, *diarrhœin*, to flow through, from *διá*, *diá*, through + *ρœiv*, *rhœin*, to flow). A symptom of many diseases, consisting in frequent fluid discharges from the bowels. It occurs in catarrhal or inflammatory diseases of the various parts of the bowels, as enteritis, colitis, and duodenitis, in cholera, typhoid fever, Bright's disease, dysentery, and tuberculosis. It is often a temporary affection, due to an effort of nature to remove poisonous or indigestible substances from the intestine. It follows the use of purgative medicines, as is intended. It sometimes occurs in wasting diseases, from the relaxed condition of the blood vessels of the intestines, whereby the water of the blood soaks through and escapes with the feces. A form of nervous diarrhœa is due to suspense or dread; and there is another variety, called morning diarrhœa, occurring in neurasthenic individuals. If the stools contain undigested particles of food, the diarrhœa is termed *lienteric*. Pain, some weakness, and soreness accompany the disorder in most cases. The treatment must be directed, as usual, to removing the cause. If the diarrhœa is caused by indigestibles, a cathartic like castor-oil or rhubarb should be used, and very little simple food should be given for a day afterwards. In other cases carminative and astringent drugs are used, such as ginger, catechu, cardamom, bismuth, chalk, or boiled flour. Opium, lead, iron, capsicum, and camphor are sometimes prescribed. Before using drugs it is, however, necessary to determine, in all but simple cases, whether the diarrhœa is beneficial and therefore should not be checked. See CHOLERA.

DIARRHŒA, WHITE, OF CHICKENS. This is probably the most destructive disease of chickens with which the poultryman has to deal, the loss varying in different years, and placed at from 10 to 90 per cent. Sometimes it is impossible to raise any of the chicks. A good authority states that more than 50 per cent of the chicks hatched throughout the United States are lost from white diarrhœa in its various forms. It is more common among artificially hatched and brooded chicks than among those hatched and cared for by hens. The disease is limited to the first three weeks of the chick's life so far as serious mortality from it is concerned, the heavy loss occurring between the ages of one and three weeks; where the brood is badly affected, the chicks may continue to die until the fourth or fifth week.

The most prominent symptom of the disease is more or less profuse diarrhœa, the droppings consisting almost entirely of mucus from the intestinal tube and the white secretion of the kidney. The affected chicks are first observed to huddle together and remain under the hover or the hen more than young chicks should. Soon they appear listless, stupid, and sleepy—standing or sitting in one position with their eyes closed—few efforts being made to pick up food. Their plumage loses its lustre, the wings droop or project slightly from the body, and the characteristic diarrhœa soon appears. The droppings may be slight or profuse, white or creamy in color, more or less mucilaginous and glairy, and they may be mixed with a brownish material. Often the sticky excrement adheres to the downy feathers about the vent, dries, and continues to accumulate until it completely covers and plugs the opening. This condition, known as "pasting up behind," will, unless soon relieved, bring about an early death of the chick. The diarrhœa results from irritation of the intestines and the increased secretion of mucus, while the large quantity of white material secreted by the kidneys is due to fever and rapid breaking down of the elements of the tissues. Many of the diseased chicks chirp or peep almost constantly; they gradually waste away and become weaker and more emaciated until their legs are scarcely able to support their bodies.

There appear to be two principal causes of this disease—one, referred to as coccidiosis, caused by a protozoan parasite of the genus *Eimeria* (*Coccidium*). The other, known as bacillary white diarrhœa, caused by the *Bacillus pullorum* of Roettger. The *B. pullorum* often infects hens and the eggs which they lay. Such eggs produce chicks which have the germs of the disease within them when they are hatched, and these chicks show symptoms within the first few days of their lives. The bacillus may also be spread from chick to chick through being scattered with the droppings which contaminate the food and drink and cause the appearance of like symptoms when the chicks are from one to two weeks old. Incubators and brooders, as well as coops, become infected and preserve the contagion indefinitely. Adult fowls are resistant and do not show any symptoms when laying infected eggs.

Medicinal treatment of affected chicks has but little effect upon the course of the disease. The feeding of sour milk to chickens appears to be a good means of preventing or at least holding in check epidemics of bacillary white diarrhœa, and it should be fed early and kept before the chicks constantly. Preventive measures should begin with the eggs used for hatching. When purchased, they should be only from flocks known to be healthy. Before placing the eggs in the incubator or under the hen they should be wiped with a cloth wet in grain alcohol of 70 or 80 per cent strength to remove any germs that may be on the surface of the shell. The place should be thoroughly disinfected by saturating the premises with a 5 per cent solution of carbolic acid or a strong solution of a coal-tar disinfectant. The drinking water should be changed frequently and should contain 10 grains of copperas to every gallon, or enough potassium permanganate to give the water a rather deep wine color. Any chicks which sicken should be immediately re-

moved and isolated or killed. For complete elimination of white diarrhoea from a poultry yard it is necessary to reject for breeding purposes stock which harbors the infection and to obtain eggs or live stock from sources where it has not been known to exist.

Consult: Rettger, Kirkpatrick, and Stoneburn, "Bacillary White Diarrhoea of Young Chickens," *Bulletin* 74 (Conn. Storrs Expt. Sta.), and Morse, "White Diarrhoea of Chickens, with Notes on Coccidiosis in Birds," *Circular* 128 (U. S. Dept. Agr., Bur. Anim. Indus.).

DIARY (Lat. *diarium*, from *dies*, day). A word which means simply a daily record. It does not, however, as the word is generally used, include every sort of daily record, but rather such as have reference to the writer personally. In it the man of letters inscribes the daily results of observation, reading, thought, or feeling. To the man of affairs it is a chronicle of memorable events, to the physician a register of engagements and professional memoranda, and to men in general a record of what has been of especial interest to them. The usual diary is a book with a separate blank space for each day in the year, these spaces varying in size and form, as the particular bent or profession of the diarist may render necessary. It usually contains some general information and a calendar. Any convenient blank book, however, often serves the purpose. The Greeks had the diary, which they called the *ephemeris* (meaning 'of the day'). This word in its plural form, *ephemerides*, has been adopted by some scholars. It is the name that Casaubon gave to the records of his daily studies. The word "journal" is also in use as synonymous with "diary": we have, e.g., the *Journal of Sir Walter Scott*. Diaries have often furnished the historian with invaluable material, supplying the absence of public records, furnishing minute and graphic details of social conditions and the secret springs of public events that are not to be looked for in more formal records, and illuminating the lives and characters of men of mark. Notable among English diaries are those of Pepys and Evelyn (qq.v.).

DÍAS, dē'ash, GONÇALVES ANTONIO (1823-66). A Brazilian poet, born at Caxias. He was educated at the university of Coimbra, Portugal, and for a time practiced law at Maranhão, Brazil. He was afterward professor of history in the College of Dom Pedro II at Rio de Janeiro. His works include a report, *Brazil e Oceania*; several papers of value on the migrations of the South American Indian tribes; and a number of volumes of poetry, among them the series *Primeiros Cantos* (1846), *Segundos Cantos* (1848), and *Últimos Cantos* (1850).

DÍAS, HENRIQUE (?1600-?161). A Brazilian soldier of African blood, born in Pernambuco. He fought with the Portuguese against the Dutch under Gen. Matias de Albuquerque (1633), and did valuable service. He defended Arraial do Bom Jesus and upon its fall was permitted by the Dutch to escape and rejoined the Portuguese army. His brave conduct caused him to be made commander in chief of the negro forces, and he was rewarded with the cross of the Order of Christ. In 1645 he rose against the Spaniards and incited the districts of Sergipe, São Francisco, and Alagoas to revolt. For the next 10 years he fought

continuously, but after the Dutch and independent Spaniards were beaten, Dias was not remembered and promoted with the other generals who fought in Pernambuco. He died in poverty, although his name has always been given to a negro regiment commanded by one of its own race. The date of his death is not known, since nothing is heard of him after his share in the recovery of Arrecifes (1654) and his presence at the capitulation that put an end to the war of 24 years.

DÍAS (dē'as) DE NOVAES, BARTHOLOMEU (?-1500). A Portuguese navigator and the discoverer of the Cape of Good Hope. He came of a family of famous sailors.—JOÃO DIAS was associated with Gil Eannes in the voyage of 1434, when Cape Bojador was first doubled, and DINIZ DIAS was the discoverer of Cape Verde in 1445. In 1478 a BARTHOLOMEU DIAS, presumed to be identical with the subject of this article, made a voyage to Guinea for ivory and slaves. In any case we find that in 1481 he was in command of a vessel sailing to the Gold Coast. Dias was a cavalier of the King's household and superintendent of the royal warehouses when, in October, 1488, King John of Portugal selected him to bear a message to Prester John by sailing around Africa. After several months of preparation Dias sailed for the south in the early summer of 1487 with three vessels. One, a slave vessel, was left at a harbor near the limit of previous exploration, and then Dias began his long voyage along the unknown African coast, to a part of which he gave the expressive name of Hell. Just after New Year's Day, 1488, he was caught by a storm which drove him southward for 13 days, until his crews, fresh from the tropics, began to suffer from the cold. As soon as the storm subsided Dias steered eastward, but, not meeting with land for several days, he turned his prow northward. After sailing 150 leagues he sighted high mountains, and anchored, Feb. 3, 1488, in the modern Mossel Bay, in Cape Colony. Finding that the coast ran east and west, he followed it to Algoa Bay, where the coast began to trend more towards the northeast. Dias proceeded as far as the mouth of the Great Fish River, but was induced by the complaints of his sailors to turn back. It was probably on May 16 that he passed Cape Agulhas, the actual southernmost point of Africa, and a day or two later he saw the striking Table Mountain and the cape which he is commonly said to have named Cabo Tormentoso (Cape of Storms), in memory of the perilous experiences with which it was associated, but which the Portuguese King rechristened Cabo da Boa Esperança, the Cape of Good Hope, though, according to Christopher Columbus, who was present at the royal interview, Dias himself proposed the name. In December Dias reached home, with the news that the point of Africa had been turned, and that the way lay open towards the spice markets of the East. He had added 1200 miles of coast to the knowledge of European sailors and geographers. Between 1490 and 1495 Dias was in command of a vessel engaged in the African trade. When, in 1497, Vasco da Gama was dispatched to complete Dias's discovery of the way to the East, the latter accompanied him as far as the Cape Verde Islands and thence sailed to the Gold Coast to trade. Three years later he commanded one of the ships in Cabral's fleet. Leaving Brazil in

May, 1500, Dias perished in a storm which wrecked his vessel. Consult E. J. Ravenstein, "Voyages of Cão and Dias," in *London Geographical Journal* (1900).

DIASPORE (Gk. *διασπορά*, *diaspora*, a scattering, from *διασπείρειν*, *diaspeirein*, to scatter, from *διά*, *dia*, through + *σπείρειν*, *speirein*, to scatter). A hydrated aluminum oxide that crystallizes in the orthorhombic system, is transparent to translucent, and usually white or light gray, though sometimes of a brownish or yellowish color. It occurs with corundum and emery in dolomite and chlorite schist. This mineral is found in granular limestone with emery, in the Ural region, in Hungary, Sweden, Asia Minor, and in the United States at the emery mines of Chester, Mass., where it occurs in large plates in crystals, and is also found with massive corundum near Franklin, Macon Co., N. C.

DYASTASE (Gk. *διάστασις*, *diastasis*, separation, from *διαστέλλειν*, *diastellai*, to separate, from *διά*, *dia*, apart + *στέλλειν*, *stellai*, to stand). An enzyme, or more likely a group of enzymes, found in both animals and plants, which has the power of converting starch into a sugar. It has also been called amylase, and in the saliva is known as ptyalin. In plants, where it is practically universal, diastase occurs in at least two modifications, viz., secretion diastase and translocation diastase. These differ in their distribution, their mode of action on starch grains and starch paste, the optimum temperature for activity, etc. Translocation diastase is the more widely distributed of the two, being formed by fungi and bacteria, and in leaves, shoots, storage organs, and pollen grains, as well as in the seed. Its function seems to be to make possible the translocations of carbohydrate food, temporarily or permanently stored as starch, by digesting it into a soluble sugar. Translocation diastase is therefore of the utmost importance in plant nutrition. Secretion diastase is formed by special secreting cells in the embryo as well as the aleurone layer of seeds, especially in grasses, and plays its chief rôle in germination by making available the food stored as starch in the seed. Translocation diastase digests and liquefies starch paste slowly, and erodes starch grains uniformly at the surface or in the centre until they disappear. Secretion diastase liquefies starch paste rapidly and corrodes starch grains by forming irregular pits, which, penetrating the grain in various directions, deepen and widen until it falls to pieces. There is some evidence that the secretion diastase of malt consists of at least two enzymes, one hydrolyzing starch to dextrine and the other hydrolyzing the dextrine to maltose. When heated to 80° C., the dextrine-forming power is still retained, but the maltose-forming power lost.

Diastase cannot be obtained in a pure state; and because its composition has not yet been ascertained, no test for purity can be established. Late work indicates that diastase is a carbohydrate associated with many times its weight of protein as a substrate and impurity. It may be obtained by crushing or grinding the tissue containing it, e.g., malt, and extracting it for 24 hours with three or four times its bulk of water or glycerine. The liquid may be filtered off, and the various substances dissolved along with the diastase may be partially eliminated by adding about three volumes of absolute alco-

hol, collecting on a filter the precipitate formed, washing it with absolute alcohol and ether, and drying. The powder so obtained may be still further purified by solution in water, reprecipitation with alcohol, and dialysis. In the dry state it may be kept indefinitely and retains its digestive power.

The action of diastase on starch is one of hydrolysis, i.e., it causes the starch to combine with water and break up into simpler compounds. The intermediate steps in the process are not known. Diastase readily hydrolyzes 80-85 per cent of the starch grain to maltose, while 15 to 20 per cent is very slowly transformed. It appears that the amylose constituent of the grain is the readily hydrolyzed portion, while the amylopectin is far more resistant. (See STARCH.) Diastase is affected in its rate of action by various reagents. Some accelerate, while others inhibit or entirely stop its action. Very dilute solutions of acids and salts of the lighter metals (sodium chloride, aluminium salts, etc.) and considerable concentration of asparagin belong to the first class; while concentrated solutions of all salts, dilute solutions of salts of the heavy metals, and various organic substances (formaldehyde, etc.) represent the second. Variation of the concentration of certain of these substances in plant organs undoubtedly is of great importance in regulating the rate of diastatic activity. With the exception of formaldehyde, diastase is much more resistant to the action of poisons than is the protoplasm; hence a digesting mixture can be protected from the action of microorganisms without interfering with the action of the diastase. Chloroform and thymol are especially used for this purpose.

Diastase is largely made use of in the manufacture of beer and alcohol, small quantities of the enzyme being capable of effecting the transformation of a considerable amount of starch. A preparation of diastase has of late also been used with some success in the treatment of fermentative dyspepsia. See ALCOHOL; BEER; DEXTIN; ENZYME.

DIASTROPHISM. A general term applied to the geological processes which cause the upheaval and subsidence of continental lands and the building of mountain systems. Such processes may result from the strains produced in the earth's crust in adjusting itself to the nucleus or possibly from the shifting of load upon the superstructure by erosion in one place and deposition in another. See GEOLOGY; CONTINENT; MOUNTAIN.

DIATHERMANCY (from *διά*, *dia*, through + *θερμανός*, *thermanosis*, a heating). A term used to express that quality of a body in virtue of which those ether waves are allowed to pass which produce thermal effects to a marked degree. All ether waves carry energy; and in many cases when these waves are absorbed their energy is spent in producing heat effects. (This is not so when the energy of the waves goes to chemical or electrical action.) It is found that in the spectrum of ether waves emitted by any body, e.g., the sun, the energy carried by waves of different wave number is in general different; similarly, the transparency of a body to ether waves varies with their wave number. In discussing diathermancy, therefore, it is necessary to consider both the total radiation transmitted and also the wave numbers of these waves. (See RADIATION.) The greater portion of the energy carried from the sun and from other bodies by

ether waves is associated with waves which do not affect our sense of sight; and other instruments have to be used to detect the waves and measure their energy. Such are thermometers, bolometers, etc. It is possible to have bodies which are absolutely opaque to those waves which affect our eyes and yet are transparent to waves which have a less wave number; and the converse is true. Lamplblack, which is opaque to nearly all radiations, has been found to transmit certain heat waves of great length, i.e., small wave number. Ebonite is transparent to long-wave radiations, so that an ebonite prism spreads some of the radiation from a hot body into an invisible heat spectrum, which is quite sensibly detected by a radiometer. The diathermancy of a body depends upon its temperature and upon its thickness. Consult Tyndall, *Heat as a Mode of Motion* (6th ed., London, 1880).

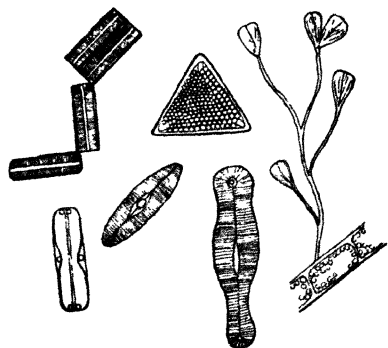
DIATHESIS (Neo-Lat., from Gk. *diathesis*, disposition, from *diatithenai*, *diatithesthai*, to dispose, from *dia*, *dia*, apart + *tribenai*, *tilthenai*, to place). A word applied in medicine to the predisposition or constitution of the body which renders it prone to certain diseased states. Thus the tubercular, scrofulous, gouty, rheumatic, cancerous, or hemorrhagic diatheses are mentioned. A person with gouty diathesis is one in whose case exposure to cold, eating indigestible food in large quantities, or drinking beer causes gouty pains and increased amount of uric acid in the urine; who is likely to have eczema, whose blood is deficient in hemoglobin, and whose arteries are inelastic. The study of diathesis is of great importance, as avoidance of disease through choice of occupation and habits is often possible, if predisposition to disease is recognized.

DYATOMACEE (Neo-Lat nom. pl. from Gk. *diatomē*, *diatomē*, severance, from *diaterein*, *diaterein*, to cut through, from *dia*, *dia*, through + *terein*, *temnein*, to cut) A group of one-

celled, the stalks often branching profusely. The forms of the cells are extremely numerous, one of the most common free-swimming forms being boat-shaped (*Navicula*); there are also rods, wedges, disks, etc.

A special feature of diatoms is the cell wall, which consists of two siliceous valves, one overlapping the other like the two parts of a pill box. This wall forms a complete and resistant skeleton, so that diatoms occur as fossils, often forming large deposits. It has been stated that these siliceous skeletons are falling as a continuous shower from the plankton to the sea bottom. As fossils, they are found especially abundant in the Tertiary period, where the deposits are known as siliceous earths. Such deposits are also abundant in rocks of other ages, and probably diatoms will be recognized in the oldest formations. These deposits constitute an important source of abrasive materials, and the products are known under such names as tripoli, diatomaceous earth (qq.v.), Richmond earth, electrosilicon, kieselguhr, etc. In many cases the valves are sculptured with fine transverse lines, which are really rows of dots, the markings being so regular and minute as to serve as a test of the definition of microscopic lenses. There is also a longitudinal line which represents a series of openings, through which pseudopodia are thrust for locomotion. The protoplast has a very characteristic structure, the central nucleus being swung in a bridge of cytoplasm, and the characteristic brownish-yellow pigment occurring in two or more plates. The pigment is really due to a mixture of a green constituent (possibly chlorophyll) and a golden-brown constituent called diatomin. In cell division the growth of the protoplast separates the two valves, and, the division occurring in the plane of the valves, each new protoplast possesses one of the old valves and forms a new one on the naked side. It follows that one of the two cells thus produced is of the same size as the parent cell, while the other is smaller, for the small valve of the parent cell becomes the larger valve of the daughter cell. This means that among the progeny there are series of individuals of diminishing size. When this diminution in size has reached a minimum, auxospores are formed, the name meaning "enlarging spores." Auxospores are produced in a variety of ways, the simplest being the separation of the valves and the escape of the protoplast, which in this free condition grows to the maximum size and develops new valves. In other cases the protoplast divides into two daughter protoplasts that escape and enlarge. In still other cases two liberated protoplasts fuse, the product being an auxospore, which behaves as described in the other cases. The relationships of diatoms are very obscure. They seem to stand apart from the other groups of thallophytes. In certain particulars the cell structure suggests that of the desmids (q.v.), while the brown pigment associated with the green suggests brown algæ. At present the group is kept apart from others as a distinct assemblage of thallophytes.

DYATOMACEOUS EARTH (Ger. *Bergmehl*). This material, often incorrectly called infusorial earth, tripolite or fossil meal, occurs usually in the form of a white or grayish powder of extremely fine texture, less often in consolidated form. When pure, it is composed almost entirely of the indestructible siliceous



DIATOMS.

celled plants commonly known as diatoms. They occur in profusion in fresh and salt water and in damp soil, approximately 6000 species being known. They exist in such numbers in the ocean as to form a large part of the floating plankton (q.v.), a free-swimming and free-floating world of minute organisms. They are solitary or free-swimming forms, or are attached by gelatinous stalks excreted by the

cases of diatoms (see DIATOMACEÆ), but is often more or less impure, due to the presence of clay, sand, or organic matter.

The two following analyses represent the composition of (I) pure earth from California, and (II) impure material from Virginia:

SiO ₂	86.89	63.17
Al ₂ O ₃	2.32	19.30
Fe ₂ O ₃	1.28	6.32
CaO	.43	.06
MgO	tr.	.69
Alkalies	3.58	3.14
FI ₂	—	.88
H ₂ O	4.89	6.39

The earth has accumulated in beds of considerable thickness in the Tertiary formations in some regions, and deposits are now being formed on the bottoms of some fresh-water lakes and on the sea floor. Owing to the angular nature and hardness of its component particles, diatomaceous earth has valuable abrasive properties; it is also employed as an insulating material for boilers and steam-pipe coverings, and mixed with clay for hollow partition blocks. Deposits of diatomaceous earth abound in the Tertiary and Quaternary formations of many countries. In the United States it has been dug in Virginia, Maryland, Connecticut, New York, and in some of the Western States, notably California, where the deposits are several thousand feet thick. The supply far exceeds the demand.

Consult Ries, *Economic Geology* (New York, 1910), and Merrill, *Non-Metallic Minerals* (ib., 1910).

DIATOMS. See DIATOMACEÆ.

DIATONIC SCALE (Lat. *diatonicus*, from Gk. *διатωνικός*, *diatonikón*, from *diátonos*, *diatonos*, outstretched, from *diastreiv*, *diasteinein*, to stretch out, from *diá*, *dia*, through + *streiv*, *teinein*, to stretch; connected with Lat. *tenus*, Skt. *tanu*, Ger. *dunn*, Eng. *thin*). This scale in music is one in which there are seven notes in the interval of an octave at intervals given by the ratios

$$24 : 27 : 30 : 32 : 36 : 40 : 45$$

Thus, if a note whose frequency is 240 is taken as the keynote, there will be the following notes in the interval of an octave:

$$240, 270, 300, 320, 360, 400, 450,$$

and the octave of 240 will give the frequency, 480. The notes in the lower and upper octaves would then be

$$120, 135, 150, 160, 180, 200, 225, \text{ and } 480, 540, 600, 640, 720, 800, 900, \text{ etc.}$$

It is evident that the ratios of these various notes are the simplest possible. Thus the ratios 1 : 2, 1 : 3, 1 : 4, 2 : 3, 3 : 4, etc., occur. For this reason chords on this scale are in the greatest possible harmony. (See ACOUSTICS.) If, however, music composed with the keynote 240 is transposed to the key 300, the diatonic scale required would be

$$300, \frac{11}{8} \times 300, \frac{5}{4} \times 300, \frac{3}{2} \times 300, \frac{11}{4} \times 300, \text{ etc. ; that is,}$$

$$300, 337\frac{1}{2}, 375, 450, \text{ etc.}$$

But some of these notes do not occur in the original scale with the keynote 240, and for this reason the diatonic scale is unsatisfactory.

Other scales are now used, which include a greater number of notes in the interval of the octave. See MUSIC.

DYATRIBE (ML. *diatriba*, discussion, Gk. *διὰ τριβή*, *diatribē*, disputation, from *διὰ τριβήν*, *diatribēin*, to discuss, from *diá*, *dia*, through + *tribēn*, *tribein*, to rub). A disputation or critical exercise. The name was originally applied to a critical examination of a literary work, but was later extended to bitter and violent criticism, written or spoken, on any subject.

DIAULOS. See OLYMPIC GAMES.

DÍAZ, DON JUAN MARTÍN. See EMPÉCINADO.

DÍAZ, *dé'ás*, PORFIRIO (1830-1915). A president of Mexico. He was born at Oaxaca, of Spanish parentage, and was studying law in his native town when the war with the United States broke out. Young Díaz entered a militia regiment in 1847 and thenceforth devoted himself to a military career. In 1854 he commanded a battalion under Alvarez in the contest against Santa Anna. A few years later he identified himself with Juárez and the Liberal party and in 1861 was elected deputy to the National Congress. He soon resigned to take the field and won a victory over the reactionist Marquez at Jalatlaco. During the French intervention he won a high reputation as one of the most skillful and courageous of the patriot leaders. In May, 1863, while directing the defense of Puebla, he was forced to surrender, but escaped shortly after and went to Oaxaca, where he raised a new force and made considerable headway against the French. In February, 1865, he was again captured, but escaped once more, and once more reappeared at the head of an army he had brought together at Oaxaca. He gradually forced the invading troops to adopt the defensive, and after the evacuation of Mexico by the French he advanced to Puebla and took the city, April 2, 1867. On June 21 he entered the city of Mexico. In the same year he was a candidate for the presidency against Juárez, but, being defeated, withdrew to his estates. He never ceased plotting against the government, however, and his intrigues occasionally broke out in the form of armed revolts against Juárez and his successor, Lerdo de Tejada. He was twice forced to flee the country—in 1872 and again in 1876. Returning quickly on both occasions, Díaz succeeded in the latter year in defeating his enemies at Tecuac (November 16). He finally drove Lerdo out, and in May, 1877, he became President. Order was restored in a remarkably short time. Díaz soon managed to win the confidence of European investors, the country was opened up, industries were developed, and the modern period of prosperity was firmly established. As the Mexican constitution provided that no man should hold the office of President for two consecutive terms, General Díaz was succeeded in 1880 by his close personal friend General Gonzalez. It soon became evident, however, that only one man could win the trust and support of the Mexican people and of the foreign capitalists upon whom the welfare of the nation depended, and so, after Díaz had been again elected President in 1884, the constitution was amended in order to provide for his continuance in that office. The forms of election by popular vote were duly complied with at each recurring period since, but no serious opposition to Don Porfirio, as he was affectionately called by the Mexican populace, devel-

oped. Opposition to what was considered his dictatorial role culminated in the early part of 1911 in a revolution headed by Francisco Madero. This was successful, and Díaz abdicated in May, 1911. He died in Paris, July 2, 1915.

DÍAZ, de'áth, Ruy, rōs (1503-38). A Spanish soldier, born at Seville, Spain. In 1532 he accompanied the expedition of Diego de Almagro to Peru, participated in the capture of Cuzco (1534), and displayed remarkable skill and courage in his encounters with the Indians. He was subsequently selected by Pizarro to choose the site of a city to serve as the capital of the province and thus became the founder of Los Reyes (now Lima), the building of which was begun Jan. 18, 1535. He afterward took an active part in the campaign in Chile and supported the cause of Almagro.

DÍAZ DE LA PEÑA, de'áz' de lá pá'nyá', NARCISSE VIRGILLE (1807-76). A French landscape painter, of the Barbizon school. He was born in Bordeaux, of Spanish parents, refugees from Salamanca. His father died in England when the boy was three years old, and his mother, returning to France, supported him by teaching Spanish and French. She died at Sévres, near Paris, when he was 10 years old, and Narcisse was adopted by a Protestant clergyman of Bellevue. He rambled through wood and dale, acquiring that love of nature which afterward made him a great landscape painter. In one of these rambles Narcisse was bitten by a poisonous insect, which necessitated the amputation of his leg. He was apprenticed to a porcelain maker at Sévres, an uncle of Dupré, who worked there and became his staunch friend. This work, no doubt, helped to develop his wonderful sense of color, but Díaz was too independent a genius to become a porcelain painter. While studying painting, he lived in great poverty in Paris, even having to beg. François Souchen, an historical painter, was his teacher, but Díaz was much attracted by the works of Correggio in the Louvre and seems also to have been influenced by Leonardo and Prudhon. But he always went his own way, and was in the main self-taught. About 1836 he went to Barbizon, where, under the influence of Rousseau, he devoted himself to landscape painting, producing the best of his works. He continually exhibited at the Salon, receiving medals in 1844, 1846, and 1848 and the cross of the Legion of Honor in 1851. He was very prolific, and, as his pictures sold well, he became quite wealthy. He was fond of life, and in his magnificent studio in Paris he dispensed great hospitality. He died at Mentone, Nov. 18, 1876, in consequence of a cold taken at the opera.

Díaz was a man of unusual gifts, but he lacked the application and perseverance essential to a genius of the very first order. He was an admirable colorist, brilliant in execution, and of a striking originality, but his drawing was often weak. His landscapes are usually treescapes, showing the play of light and shade among forest trees. He peopled them with nymphs, cupids, Oriental women in gaudy costume, gypsies, and the like. He loved the summer with its bright sunshine and especially excelled in depicting rich autumn tints. Díaz is magnificently represented in the Louvre, particularly since the acquisition of the Thierry collection with eight examples and the Chaudard with 15. Among the best of these are:

"The Fairy with Pearls," "Venus and Arcurus," "Foolish Girls," the brilliantly tinted "Descent of the Gypsies," and a magnificent landscape, "Sous bois." Fine collections of his paintings are also in the Museum of Rheims with 10 examples, and at Montpellier with five, in the Alexander Young collection, London, and in the Metropolitan Museum, New York (including the Vanderbilt collection), with 11 examples, including a splendid landscape, the "Forest of Fontainebleau." He is represented also in other American public and private collections, such as the Art Institute of Chicago, the Walters collection, Baltimore; in many French provincial museums; in the National Gallery, Berlin, the Mesdag Gallery, The Hague, and many other European galleries. Consult: Muther, *History of Modern Painting* (London, 1907); Balluins, in *Les artistes contemporains* (Paris, 1877); Hoerber, in Van Dyke, *Modern French Masters* (New York, 1896); Hustin, in *Les artistes célèbres*, and the authorities cited under BARBIZON, PAINTERS OF.

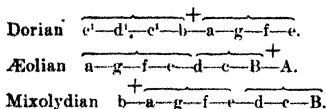
DÍAZ DEL CASTILLO, de'áth del ká-sté'lyó, BERNAL (c.1492-?1593). A Spanish soldier and author, born at Medina del Campo. In 1514 he sailed for America to better his fortunes, and he landed, after a short residence at Noubre de Dios, in Cuba, whence he made several expeditions to the west. He accompanied Cortés to Mexico in 1519 and after the conquest settled in that country. His *True History of the Conquest of New Spain* is important because narrated by an eyewitness. The style of it, however, is far from elegant. The first edition appeared at Madrid in 1632 in three volumes, under the auspices of Friar Alonso Remón, who very badly garbled the text. Within the next few years four other editions appeared. English versions of these corrupt editions appeared in 1800 (by Maurice Keatinge) and in 1844 (by John Ingram Lockhart). The work was done into German in 1838 by Ph. J. von Rehfues and in 1848 by Karl Ritter. Two French versions were made simultaneously and independently by D. Jourdanet (who published his in 1876) and José María de Heredia (in 1877). Hungarian also had two translations, by Károly Brózik (1878) and by Moses Gaal (1899). Some of these translations went to second editions—Keatinge (1803), Rehfues (1843), and Jourdanet (1877). None of these editions or translations did justice to the original, and certain strictures have consequently been made concerning Castillo's *History* that can no longer be maintained. The original manuscript has always been kept in Guatemala, first by the author, then by his descendants, and later by the municipality of the capital, in whose archives it rests to-day. This manuscript consists of one large folio volume, containing 297 leaves, written on both sides, and bound in old leather. It was published and edited critically for the first time by Genaro García in Mexico, 1904. An English translation of this edition was made by Alfred Percival Maudslay and published, with introduction and notes, for the Hakluyt Society (3 vols., London, 1908). These two new publications throw a world of new light upon the importance and credibility of Castillo's account and prove it to be second only to the account of Cortés in his letters to the Emperor.

DÍAZ DE PINEDA, dá pé-ná'ná, GONZALO (?-1545). A Spanish soldier in Peru, born in Torrelavega. In 1531 he accompanied Francisco

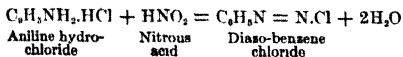
Pizarro on the latter's final expedition to Peru, in 1535 explored the Magdalena River to its mouth, in 1536 discovered the country of the Canelos Indians, and in 1540 went with Gonzalo Pizarro on the ill-fated expedition for the conquest of that region. Sent with a small band in an unsuccessful search for Orellana, who had been dispatched down the Napo River for supplies, he returned to assist them at last in reaching Peru with a half-starved remnant of the expedition. When, in 1544, Gonzalo Pizarro rebelled against the Viceroy, Nuñez de Vela, he at first sided with the latter, but subsequently joined Pizarro. Defeated by the Viceroy at Colliguén, he escaped, but died from the mistaken use of poisonous plants for food.

DÍAZ DE SOLIS, sô-lès'. See SOLIS.

DIAZEUC'TIC TONE (Gk. διαζευκτικός, *diazeuktikos*, disjunctive, from διαζευνναι, *diazeugynnai*, to disjoin, from διά, *dia*, apart + ζευγναι, *zeugnai*, to join). In Greek music, that tone which separates the tetrachords (q.v.) of the three oldest modes. In the Dorian mode the diazeuetic tone was the step from b to a. In the later modes the tetrachords were constructed so that the lowest tone of the higher tetrachord was at the same time the highest tone of the lower tetrachord. Then the diazeuetic tone was either above the highest or below the lowest tetrachord. (See GREEK MUSIC.) In the following modes the diazeuetic tone is marked +:



DIAZO COMPOUNDS (from Gk. *dis*, twice + *azo-te*, old name of nitrogen, from Gk. *a*, *n*, priv. + *ζωειν*, *zoein*, to live). An important group of carbon compounds discovered by Peter Griess in 1860. They are produced by the action of nitrous acid on salts of aromatic amido compounds, such as aniline hydrochloride. Thus, diazo-benzene chloride is produced according to the following equation:

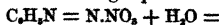


The diazo compounds are usually obtained in solution and are immediately transformed into other compounds: the given aromatic amide compound (say, aniline) is introduced into aqueous hydrochloric acid, and the solution is "diazotized" by the addition of an aqueous solution of sodium nitrite, drop by drop, with stirring, until the nitrous acid produced by a drop fails to be absorbed. The solution now contains the required diazo compound, and further transformation is effected by treating the solution as a whole. But diazo compounds have also been isolated as such. When pure and dry, they are colorless crystalline solids, chemically unstable and even more or less explosive.

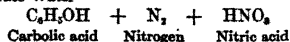
The following are the principal transformations of these peculiar substances:

1 When an aqueous solution of a diazo compound is warmed, the compound is transformed into the corresponding phenol. (See PHENOLS.) Thus, diazo-benzene nitrate (obtained by the action of nitrous acid on aniline nitrate) gives

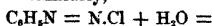
ordinary phenol (carbolic acid), according to the following equation:



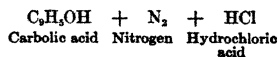
Diazobenzene nitrate Water



Similarly,

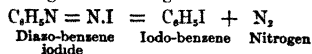


Diazo-benzene chloride	Water
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The best salt to use for this transformation is diazo-benzene sulphate, which yields practically no by-products. The transformation is, further, greatly aided by the action of light.

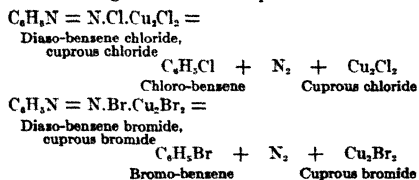
2. Diazo-benzene *iodide* would react differently: instead of combining with water, it would, if warmed in aqueous solution, simply lose its nitrogen and change into iodo-benzene:



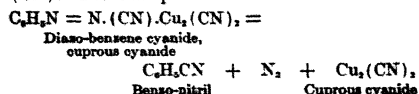
Iodo-benzene is thus usually prepared by diazotizing aniline in hydrochloric acid solution, adding potassium iodide (which changes the diazo-benzene chloride in solution into diazo-benzene iodide), letting the mixture stand for several hours, and distilling, the iodo-benzene being readily isolated from the mixed distillate. Iodine derivatives of other hydrocarbons than benzene are similarly obtained with the aid of potassium iodide.

3. From the above it is clear that an NH₂ group in an aromatic compound can be readily exchanged, through diazotization, for either an OH group or an iodine atom. A chlorine or bromine atom cannot thus be introduced: in 1884, however, Sandmeyer discovered that if, before a solution of a diazo chloride or bromide is warmed, cuprous chloride or bromide is added to it, the result is, not combination with water and the entrance of an OH group, but the entrance of a chlorine or bromine atom. This modification of the method is known as the *Sandmeyer reaction*. Later Gattermann found that finely divided metallic copper, added to a solution of a diazo chloride or bromide, produces the same effect as the cuprous salt.

The Sandmeyer reaction is explained by the assumption that the diazonium salt, i.e., the diazo chloride or bromide, forms a double compound with the cuprous salt, and that it is the double compound that breaks up, yielding the desired halogen substitution product:

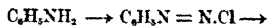


4. The Sandmeyer reaction permits of exchanging an NH_2 group also for a nitril group (CN). For example:



And as the nitril group can be readily transformed into the acid group (carboxyl, COOH), it is obvious that by diazotization and the Sandmeyer reaction an NH_2 group can be exchanged for a carboxyl group; i.e., an amido compound can be changed into an acid.

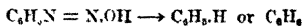
5. If the solution of a diazonium salt is rendered alkaline with sodium hydroxide, mixed with an alkaline solution of sodium stannite, and the mixture gently warmed, the result is that the unstable diazo-hydroxide formed at first loses its nitrogen together with the oxygen of its OH group, and a hydrogen atom alone remains in the place of the original NH_2 group. For example:



Aniline

Diazo-benzene
chloride

chloride



Diazobenzene hydroxide

Benzene
(a hydrocarbon)

A similar transformation takes place when a diazonium salt is heated with alcohol, but then a second reaction takes place simultaneously and in many cases even predominantly.

6. If the solution of a diazonium salt is strongly acidified with hydrochloric acid, mixed with stannous chloride, and the mixture warmed, the result is a derivative of hydrazine (q.v.)—the well-known phenylhydrazine, e.g., being thus readily obtained from diazo-benzene compounds:



Diazobenzene chloride Phenylhydrazine

The reactions noted above suffice to indicate that a great many aromatic compounds of several important classes may be produced, through diazotization, from the corresponding amido compounds. And as amido compounds are readily made by starting with the hydrocarbons abundantly contained in coal tar, it is easy to see why the diazo reaction is so extensively used, and diazo compounds regarded as so important, both in the industries (particularly in the manufacture of dyestuffs) and in the scientific laboratory. See also AZOBENZENE; COAL-TAR COLORS.

Derivative of the aliphatic series cannot as a rule be diazotized; in these, an NH_2 group is directly transformed, by the action of nitrous acid, into the group OH . For instance, ethylamine, $\text{C}_2\text{H}_5\text{NH}_2$, would give ordinary alcohol, $\text{C}_2\text{H}_5\text{OH}$; but no intermediate diazo compound would be formed. The esters, however, of certain aliphatic amino acids do give diazo compounds, and these are of no little value. The best known among these substances is the ethyl ester of *diazoo-acetic acid*, whose formula is



This remarkable substance, first obtained by Curtius in 1883, melts at 24° C., and under a pressure of 72 millimeters of mercury boils without decomposition at 143° C.

In conclusion, it may be mentioned that Kekulé's constitutional formulae of the diazonium salts, used above for the sake of convenience, have now been superseded by formulae first recommended by Blomstrand as far back as

1869. Thus, diazo-benzene chloride is now preferably written:



DIBBS. An English name for a game of great antiquity, played by boys and girls. In Russia it is sometimes played even by old men. It consists in throwing up the small joint bones of the legs of sheep and catching them first on the palm and then on the back of the hand. The antiquity of this simple kind of play is proved by figures on Grecian vases on which women are seen kneeling and engaged in the sport. In Scotland, where the game is more usually played with small pebbles or shells, it is called the "chucks" or "chuckie stanes." Out of dibbs developed the game of jackstones.

DIBDIN, CHARLES (1745-1814). An English dramatist and song writer. He was born at Southampton and began his literary career with an opera called *The Shepherd's Artifice*, produced at Covent Garden Theatre in 1762. Already a popular actor, he gained great celebrity, in 1789, by a series of musical entertainments entitled *The Whim of the Moment*. He died in straitened circumstances. Dibdin wrote about 70 dramatic pieces and, according to his own account, 900 songs, of which the best known are "Poor Jack" and "Tom Bowling." He composed the music of his songs and sang them himself. Of his sea songs, he said, they "have been the solace of sailors in long voyages, in storms, in battle; and they have been quoted in mutinies to the restoration of order and discipline." His sons, Charles and Thomas John, wrote songs and dramas. Consult: his *Professional Life* (1803), an autobiography; a brief *Life* in G. Hogarth's edition of his songs (1848); Dibdin, *The Dibdins* (London, 1888).

DIBDIN, THOMAS FROGNALL (1776-1847). A British bibliographer. He was born at Calcutta, India, studied at Oxford, and, after a short career as a lawyer, entered the Established church in 1804. He began his work in 1797 and until 1844 produced a great number of publications of a bibliographical and antiquarian character, which while they show an immense amount of labor, are so full of inaccuracies as to be almost totally unreliable. His *Bibliomania* (1809) was effective in stimulating interest in rare and early editions and led to the hearty reception of his proposal for an association of bibliophiles, which was organized as the Roxburghe Club (q.v.) in 1812. Dibdin being its first vice president. In addition to the *Bibliomania*, Dibdin's principal works are: *An Introduction to the Greek and Latin Classics* (1802); *Typographical Antiquities of Great Britain* (4 vols., 1810-19); *The Bibliographical Decameron* (1817); *Bibliotheca Spenceriana* (1814); *Bibliographical, Antiquary, and Picturesque Tour in France and Germany* (1821); *The Library Companion* (1824); *Reminiscences of a Literary Life* (1836).

DIBON. The name of two cities mentioned in the Bible. 1. A city in Moab, the modern Dhihan, about 4 miles north of Arnon (Wady Mojib) on the road between Heshbon and Petra. According to Num. xxxii. 34, it was built by the Gadites, and, in harmony with this account, the place is referred to as Dibon-Gad in Num. xxxiii. 45. In Num. xxi. 30 the Amorite King, Sihon,

is said to have reigned over Moab "from Heeshon to Dibon." It has been held by Meyer, Stade, and many scholars that the ancient song whence this fragment is taken celebrated victories of Israel over Moab in the ninth century B.C. But Schmidt, in *Messages of the Poets* (1911) and "Songs of the Conquest," in *Journal of Biblical Literature* (1914), and Böhl, in *Kanaanäer und Hebräer* (1911), have shown that there is no reason to doubt the existence of Sihon's kingdom in the light of what is now known concerning the Amorites (q.v.), and no situation in the ninth century that can be reflected in the song. That is also emphasized by the Mesha inscription found by Klein at Dibon in 1868. (See MOABITE STONE.) Mesha is here called the Dibonite, or Daibonite, as the presence of the *yod* and the Greek *δαιβωρ* suggest that the true pronunciation was. It is not quite clear whether the name is limited to the city or extended to the adjacent territory, and it has therefore been supposed that the proper name of the city in earlier times was Qorcha, and Daibon the name of the district. But it is more probable that Qorcha was the name of a certain quarter of the city where the royal residence was, and that the relation between Qorcha and Daibon was analogous to that between Zion and Jerusalem. 2. A place in Judah, mentioned in Neh. xi. 25, the present Dhaib, 5 miles north of Arad.

DIBRA, δῆβρά. A city in the Kingdom of Servia, 3 miles from the juncture of the Black Drin and Radika rivers, near the Albanian frontier (Map: Turkey in Europe, C 4). The population, numbering about 16,000, are mainly Albanians, but there are influential Serb and Bulgarian colonies, the latter of whom support the only bishop of the Bulgarian exarchate among the Albanians. Dibra is a fortified city, and the centre of an important agricultural trade. It was long the capital of the sanjak of Dibra in the Turkish Vilayet of Monastir, but was taken by the Servians in the Balkan War (q.v.) and confirmed to them by the treaty adjustments of 1913.

DIBRANCHIATA (Neo-Lat. nom. pl., from Gk. *dis*, *dis*, twice + *bráχhia*, *branchia*, gills). A group of cephalopod mollusks, characterized by the presence of a pair of gills and by the internal position of the shell, as contrasted with the two pairs of gills and external shell of the tetrabranchiate nautiloids; the dibranchiate skeleton supporting the internal organs; the tetrabranchiate shell serving as an external protective covering to the animal. The Dibranchiata have undoubtedly been evolved from the Tetrabranchiata, probably in Triassic time, and there are even yet a few living forms, as *Spirula*, which are relics of the early intermediate stages between the two groups. Modern examples are the cuttlefish, squid, octopus, and sepia (qq.v.); while *Belemnites* (q.v.), *Belemnitoides*, *Geoluthis* (q.v.) are a few of the many fossil forms which range from Triassic to recent times. For illustration, see Colored Plate of **DECAPODS**, ETC.

DICÆARCHUS (Lat., from Gk. *Δικαίρχος*, *Dikaiarchos*). A Greek philosopher of Messina, in Sicily, a contemporary of Aristotle, and friend of Theophrastus (q.v.). The ancients, including Cicero, warmly praise his works. Of these it is quite impossible to determine an accurate bibliography, since many referred to as independent works were probably sections of larger volumes. His *Bios* 'Ελλάδος ('The Life of

Greece,' in 3 books), in addition to political affairs, took some account of poetry, music, and the games, and was thus the pioneer attempt in what the Germans style *Kulturgeschichte*. The fragments of this work were edited by Fuhr (1841). His *Τριπολίτικος*, *Tripoliticos*, was an account of the ideal form of government: this Dicæarchus found in a mixture of monarchy, aristocracy, and democracy, such as existed at Sparta. In his *Λαοβιακοὶ Λόγοι*, *Laobiakoi Logoi*, and his *Κορινθιακοὶ Λόγοι*, *Korinthiakoi Logoi*, cast in dialogue (q.v.) form, he sought to prove the soul mortal. (Consult Cicero, *Tusculanae Disputationes*, i, 21 and 77, and editors there.) He wrote also a description of the world, illustrated by maps; in this field he was the most important forerunner of Eratosthenes (q.v.). Consult the article "Dikaiarchos, 3," in Pauly-Wissowa, *Real-Encyclopädie der klassischen Altertumswissenschaft*, vol. v (Stuttgart, 1905), and Christ, *Geschichte der griechischen Litteratur*, vol. ii (5th ed., Munich, 1913).

DICÆUM (Neo-Lat., coined by Cuvier, 1817). A genus of Oriental and Australasian small birds, typical of a family, Dicaeidae, closely allied to the sunbirds. They are sometimes called honey peckers or flower peckers (in India), but without much reason, and the scientific name has become English in Australia, where the family is most prominent. All are small, brilliant-colored, insect-eating birds, with melodious voices, and most of them build elegant purse-shaped nests of soft materials suspended from bushes. The swallow dicæum (*Dicaeum hirundinaceum*) is one of the best known, and resembles in size, shape, and habits one of the northern kinglets, but is purple blue, with a red throat and under tail coverts. Some ornithologists put here also the diamond bird (q.v.), but most class it elsewhere. See Plate of **PENSILE NESTS OF BIRDS**, with **NIDIFICATION**.

DYCAST (Gk. *δικαστής*, *dikastēs*, from *δικν*, *dikē*, right, justice). A member of the popular courts of Athens. These courts seem to have been instituted by Solon, and from the fifth century B.C. were a most important part of the democratic government. From the body of Athenian citizens over 30 years of age there were chosen annually by lot 6000 in the fifth century, 5000 or possibly fewer in the fourth century. From this number sections, of not over 501, were chosen daily to hear cases. In very important trials two or more sections might be combined, and we hear of one court of 2500 jurors; sometimes, on the other hand, but 20 or 40 formed the court. The evidence was taken beforehand by a magistrate, who presided at the trial, and the dicasts merely listened to the speeches of the parties to the suit and the reading of the evidence. The voting was secret, and the dicasts were sworn to render their decision in accordance with the laws and the evidence. Unlike a modern jury, they were the sole judges of the law as well as of the facts, a condition which hindered the development in Athens of any such body of judicial precedents as grew up in Rome. Consult Meier and Schömann, *Der attische Process* (Berlin, 1883-87), and Lipsius, *Das attische Recht und Rechtsfahren* (Leipzig, 1905-). See **HELLEA**.

DICE (OF. *do*, *det*, Fr. *dé*, Sp., Portug., It. *dado*, *die*, from Lat. *datus*, p.p. of *dare*, to give). The origin of dice is variously ascribed by some authors to occult sources, but more authentically to Psalmedes of Greece (1244 B.C.).

Without question the games played with them are the simplest and most universal games of chance in the world. The dice exhumed from Thebes differ in no respect from the six-sided cubes of bone or ivory in use to-day, with spots ranging on each side from 6 to 1, the sum of the spots on the opposite sides of a cube always making 7. Dice are thrown nearly universally from a cylindrical hollow case, but among the negroes, in the game of craps (q.v.), they are cast from the hand. Mostly they are thrown from the box upon a table, but it was not uncommon in some parts of England until quite recent times to throw them into a bowl. According to the purposes of the cast, any number, from one to five dice, are cast. The highest aggregate numbers exposed on the top of the dice when they settle, in one or more throws, as agreed, win. There are a variety of other purely dice games, such as "round the spot," wherein only those spots which lie round a centre spot are counted, such as three or five—the first counting two and the other four: "multiplication," in which the first throw is three dice, the highest being left on the table and the two thrown again, the highest being again left and the last one thrown again; and "draw poker," played with five dice, each player having one throw and the privilege of a second. In the first throw all the dice are thrown, but the player need not take them all up; he may select only those which are satisfactory to him or leave the whole. The throws rank as in the card game of poker (q.v.), beginning with the lowest: one pair, two pairs, triplets, a full hand, four of the same; the highest throw is five alike. *Fengt-un* is played with a single die, each player throwing as often as necessary to get the sum of the spots equal to, or as near as possible, not over, 21. "Ace in the pot" and "help your neighbor" are other combinations of throwing the dice, or, in other words, "casting the die." Unscrupulous gamblers adopt the practice of loading dice by plugging them with lead on a particular side, so that the highest number may turn up, by gravitation, as the dice roll out of the box. Consult *Foster's Complete Hoyle* (New York, 1909).

DICENTRA (Neo-Lat. nom. pl., from Gk. *dikēntros*, *dikēntros*, two-pointed, from *di-*, double + *kēntros*, *kēntros*, point). A genus of hardy perennial plants of the family *Fumariaceae*. *Dicentra spectabilis*, bleeding heart, a native of Siberia and the northern provinces of China, was introduced into Great Britain from the island of Chusan in 1846 and rapidly became a general favorite on account of its long racemes of drooping, delicate, rosy-pink flowers. The common squirrel corn (*Dicentra canadensis*) is one of the first spring flowers of the northern and eastern United States, as is also Dutchman's-breeches (*Dicentra cucullaria*). *Dileytra* is an old name for the genus *Dicentra*.

DICEY, *di'si*, ALBERT VENN (1835–). An English barrister and author. He was educated at Balliol College, Oxford, was admitted to the bar in 1863, from 1882 until 1909 was professor of English law in the University, and later became a fellow of All Souls' and an honorary fellow of Trinity College. He received in 1890 an appointment as Queen's Counselor and in 1899–1912 was principal of the Workingmen's College. His publications include: *The Privy Council* (Arnold prize essay, 1860 and 1887); *The Law of Donical* (1879); *England's*

Case against Home Rule (1886); *a Treatise on the Conflict of Laws* (1896); *Lectures on the Relation between Law and Public Opinion in England during the Nineteenth Century* (1905); *Introduction to the Study of the Law of the Constitution* (7th ed., 1908).

DICEY, EDWARD (1832–1911). An English journalist and author. He was educated at Trinity College, Cambridge, was for a time a leader writer for the *Daily Telegraph*, and from 1870 to 1889 was editor of the *Observer*. In 1875 he was called to the bar. He was regarded as an authority on matters appertaining to South Africa, Bulgaria, and Egypt. He was created C.B. in 1886. His publications include: *Rome in 1860* (1861); *The Schleswig-Holstein War* (1864); *The Morning Land* (1870); *England and Egypt* (1884); *Bulgaria, the Peasant State* (1895); *Story of the Khedivate* (1902); *The Egypt of the Future* (1907).

DICHO GAMY, *di-kōg'a-mi* (Gk. *diχa*, *dicha*, in two + *γάμος*, *gamos*, marriage). Flowers whose anthers and stigmas do not mature at the same time are said to be dichogamous. "Protandry" is the condition in which the anthers mature first; "protogyny" that in which the stigmas mature first. See **POLLINATION**.

DICHOTOMY, *di-kō't'o-mi* (Gk. *diχοτομία*, *dichotomia*, a cutting in two, from *diχa*, *dicha*, in two + *τέμνω*, *temnō*, to cut). In botany, a form of branching in which the axis forks at the apex and hence continues no farther. It is specially characteristic of cryptogams. (See **BRANCHING**.) In logic, the method of exhaustive division in classification, of which the device known as the Tree of Porphyry may be considered typical (consult, e.g., *Lessons in Logic*, W. Stanley Jevons, London, 1880). In metaphysical anthropology, the theory of man as a twofold being, physical and spiritual, or consisting of body and soul.

DYCHROISM (from Gk. *di-*, double + *χρῶμα*, *chrōma*, color), **TRICHOISM**, **PLEOCHROISM**. Crystals not only absorb in different amounts the light of different wave lengths, but, unlike uncrystalline or amorphous substances, the amount and kind of absorption differ according to the direction in which light is transmitted through the crystal. This selective and differential light absorption is rarely perceived by the unaided eye, because so many rays from a crystal enter the eye simultaneously. If, however, polarized light be employed to bring successively into the eye light rays which at any given instant vibrate along a single direction of a colored crystal, a change in color is generally noticeable. This selective light absorption along the different directions within a crystal is termed dichroism or pleochroism. Crystals of the isometric system alone possess no pleochroism. Crystals of the tetragonal and hexagonal systems exhibit two extreme colors (dichroism), between which all the other colors produced clearly graduate. Crystals of the remaining crystal systems exhibit three extreme colors (trichroism), with regard to which all the other colors produced by the crystal are intermediate. The dichroscope is a simple device for measuring both the quality and quantity of dichroism. See **CRYSTALLOGRAPHY**.

DYCHROITE. See **IOLITE**.

DICHROMATISM IN BIRDS (Gk. *di-*, double + *χρῶμα*, *chrōma*, color). The name given to that peculiar occurrence of two phases of color in the plumage of a species of bird,

not due to age, sex, or locality, which is so well illustrated by the common eastern screech owl of the United States (*Otus asio asio*), some individuals of which are gray and some rusty red. This phenomenon is not infrequent among birds, but it is not always easy to determine what constitutes a clear case of it. Thus, some ornithologists regard the various species of flicker (*Colaptes*) as di- or rather tri-chromatic forms of a single species, while others do not regard this as the same sort of a phenomenon as the color phases of the screech owl. There are at least three distinct forms of dichromatism, known as *albinism*, *melanism*, and *erythriism*. The first is that form in which one of the phases is white, and a number of examples occur among the herons as well as in other groups of birds. One of the best-known cases is that of the little blue heron (*Florida carulea*), some specimens of which are pure white, while others are slaty blue. It was at one time supposed that the former were the young, the latter the adults; but careful study on their breeding grounds has shown that the differences are not associated in any way with age or sex. Some evidence has been produced to show that geographical conditions may have something to do with the matter, for the white birds are said to be most common on the Atlantic coast of Florida, while the colored phase is most abundant on the Gulf coast. Melanism is a form of dichromatism in which one color phase becomes very dark, almost or quite black. Examples of this occur among the large hawks of the genus *Buteo*. It should be stated that in these cases the color phases are not sharply set off from each other, as in the herons, and the melanism is rather closely associated with distribution. Erythriism is the form shown by the screech owls, already referred to, in which one phase tends to become red.

A satisfactory explanation of dichromatism is still to be offered, but recent investigations have thrown some light upon it. In the screech owl the red phase is due to a "quantitative difference" in the distribution and relative amounts of pigment, and it is said that gray individuals may become red. For these experiments consult Chadbourne, *The Auk*, vols. xiii, xiv (New York, 1896, 1897). These results should be confirmed before they are accepted as absolute. In other cases, such as the herons, it is more than possible that we have examples of species in the process of formation, and that at some future day the slaty-blue individuals of the little blue heron, e.g., will breed only with slaty-blue individuals and produce only slaty-blue offspring, while the white birds will breed only with white birds and produce white young. We should then have just such a condition as now exists in the ibises of the genus *Guara*. The white ibis (*Guara alba*) and the scarlet ibis (*Guara rubra*) are exactly alike, except for the striking difference in color, but they never breed together and are therefore regarded as two distinct species and not as dichromatic forms of one. The whole question is one of exceptional interest and seems to be closely bound up with that of the origin of species.

DICHTUNG UND WAHRHEIT, dīk'tung unt vā'r'hīt. See GOETHE.

DICK, CHARLES (1858-). An American legislator, born at Akron, Ohio, where, after admission to the bar in 1893, he took up the practice of law. During the Spanish-American War he served with the Eighth Ohio Volunteers.

He was auditor of Summit Co., Ohio (1886-93), chairman of the Republican County Committee (1887-91) and of the Republican State Executive Committee (1892-94 and 1899-1907), secretary of the Republican National Committee (1897-1900), and delegate to the Republican National Convention (1892, 1896, 1900, and 1904). While a Representative in Congress (1898-1904), he introduced the Dick Militia Bill, which became law. He was United States Senator from 1904 to 1911.

DICK, JOHN (1764-1833). A Scottish Secession theologian. He became pastor in Glasgow in 1801 and theological professor in 1820 and is remembered for his *Lectures on Theology* (4 vols., with memoir, 1834; Am. ed., 2 vols., 1836).

DICK, MR. A household abbreviation for Mr. Richard Dabley, a demented character in Dickens's *David Copperfield*.

DICK, SIR ROBERT HENRY (c.1785-1846). A Scottish soldier, son of a doctor in the East India Company's service. He entered the army in 1800 and served as an officer in the Peninsular War, fighting at Busaco, Fuentes de Onoro, and Salamanca. He distinguished himself at Quatre Bras and Waterloo; in 1837 was promoted to be major general, and in 1841-42 was acting commander in chief at Madras. In 1846 he assumed command of the Third Infantry Division in the Sikh War. He fell while leading a second charge against Sikh intrenchments at Sobraon.

DICK, THOMAS (1774-1857). A Scottish scientific writer. He was born near Dundee and studied science and theology at the University of Edinburgh. After a brief pastoral charge in connection with the Secession church of Scotland, he devoted himself to teaching, lecturing, occasional preaching, and authorship. Towards the close of his life a small pension was granted him in consideration of his literary services, his books having brought him very little pecuniary return, in spite of their great popularity both in England and the United States. He died at Broughty Ferry, near Dundee. Dick's principal works are: *The Christian Philosopher, or the Connection of Science and Philosophy with Religion* (1823, 8th ed., 1842); *The Philosophy of Religion* (1825); *The Philosophy of a Future State* (1828); *Celestial Scenery* (1837); *The Sidercal Heavens* (1840); *The Practical Astronomer* (1845). Several of Dick's writings have been translated into foreign languages, one even into Chinese. Consult Chambers, *Eminent Scotsmen* (Edinburgh, 1868).

DICK REQUEST. A fund now amounting to some £122,000, established in 1828 by James Dick, of Finsbury Square, London, for the benefit of the parish schoolmasters of Moray, Banff, and Aberdeen, Scotland. These funds yield about £4000 a year, which is distributed as an honorarium among the schoolmasters on the basis of their acquirements in the English language and literature, geography, mathematics, Latin, Greek, history, physics, and the art of teaching. Mr. Dick's object was to encourage active schoolmasters and gradually to elevate the literary character of the parochial schoolmasters and schools. His purpose has been so far successful that the grade of these schools has been advanced, and in many cases students go directly from them to the universities. Consult J. Kerr, *Scottish Education, School and University from Early Times to 1908* (Cambridge, 1910).

DICKCISSEL (imitative). The black-throated bunting (*Spiza americana*) of the open regions of the central United States, one of the most pleasing of American fringilline birds. Its back is black, chestnut, and grayish; bend of the wing, bright chestnut; chin, white; throat, black, in a conspicuous crescent; breast, yellow, changing to white towards the tail. The female lacks the black breastmark and the chestnut colors. The species is migratory, coming northward to make its nest on the ground, or in a low bush, where pale-blue eggs are laid. It is a loud and persistent singer. "All day long," says Ridgway, "in spring and summer, the males, sometimes to the number of a dozen or more for each meadow of considerable extent, perch upon summits of tall weed stalks or fence stakes, at short intervals, crying out: 'See, see, dick, dickcissel, cissel!'; therefore 'Dick Cissel' is well known to every farmer's boy." See illustrations on Plate of BUNTINGS, ETC., and of EGGS, I.

DICKENS, CHARLES (1812-70). An English novelist. He was born at Landport, a suburb of Portsea, Feb. 7, 1812, and was baptized Charles John Huffham. His father, John Dickens, who held a post in the navy pay office, was then stationed at Portsmouth, but about 1816 they moved to Chatham and afterward to London. The family was poor and improvident. His father, whom he afterward portrayed in Mr. Micawber, was imprisoned for debt in the Marshalsea, and the family for a time resided in the prison with him. Dickens worked for a while in a blacking warehouse, but after his father was relieved from his embarrassments by a fortunate legacy, Charles attended private schools. His opportunities on the whole, however, were slight, but he read considerably at home and in the British Museum and learned shorthand. He was educated by contact with life itself. After a period of reporting in the courts and in the House of Commons Dickens began in the *Monthly Magazine* (December, 1833), and continued in the *Evening Chronicle*, a series of essays and tales, collected and published in 1836, under the title *Sketches by Boz*. Encouraged by their success, he undertook to write the letterpress of the *Posthumous Papers of the Pickwick Club*, the illustrations of which were to be executed by Robert Seymour, a comic draftsman. As soon as Dickens introduced Sam Weller, the plates became of secondary interest. The *Pickwick Papers*, which appeared in monthly numbers (1836-37), not only had enormous commercial success, but they also mark an era in English literature. It was the first of a series of fictions exhibiting the life and manners of the middle and lower classes, which up to that time had rarely found an exponent, and in one respect this book probably had neither predecessor nor progeny. Neither before nor since, if we except *Humphrey Clinker*, has there ever been such a literary embodiment of healthy animal spirits. There is none like it for unflagging but never unwise merriment—for humor that is very much the reverse of dry. *Pickwick* was followed by *Oliver Twist* (1837-39) and *Nicholas Nickleby* (1838-39), adventures in the picaresque manner. They are among the first of those social novels which form so marked a feature of modern literature. The former was an exposure of workhouses and of the city conditions that lead the children of the poor into crime; the latter was aimed at

the wrongs and cruelties inflicted upon their wretched pupils by the cheap schoolmasters of Yorkshire. Both hit their mark. After this beginning Dickens set lance in rest against many a social monster. He may be sometimes wrong, but in spite of his exaggerations he can scarcely be accused of want of honesty of purpose; while quite as little can partisanship (except that he is always for the poor) be laid to his charge, since at the very time when the country gentlemen were shaking their heads at him for his want of reverence for "land," he incensed the manufacturing interest by the publication of *Hara Turis* (1854). His sarcasm is of a rather peculiar character; too good-natured to sneer, and with eyes, notwithstanding their indignant fire, that never lose sight of the ludicrous side of things; his style is mocking argument. After *Nicholas Nickleby* came *The Old Curiosity Shop* (1840) and *Barnaby Rudge* (1841). In the former, in the character of Little Nell, he first exhibited a power of setting forth child life and child thought unequalled before the appearance of George Eliot. *Barnaby Rudge* was his first and, with the exception of the *Tale of Two Cities* (1859), his only attempt to describe the past; and it was not entirely successful. A disposition of mind towards the weird and the grotesque, which showed itself in *The Old Curiosity Shop*, was subsequently developed with greater success in his *Christmas Stories* (1853), especially in *A Christmas Carol*. After a voyage across the Atlantic Dickens published, in 1842, *American Notes for General Circulation*; but a much more admirable result of that visit to the United States appeared in *Martin Chuzzlewit* (1844), which was perhaps the greatest of his humorous works since *Pickwick*; at least, the English scene is made delightful by the immortal Pecksniff and Mrs. Gamp, but the rascality in the American part of the book had no such good humor, and the violence of his satire does not become more attractive with time. After this work his animal spirits—a rare gift among even comic authors, and seldom lasting so long as in his own case—began to desert him. Humor, except in some rich creations, such as Mr. Micawber, was no longer so apparent; while, on the other hand, satire and pathos increased. In February, 1844, he went to Italy for rest, but returned at the end of the year to read to his friends *The Chimes*. His two other famous Christmas stories, the *Christmas Carol* and *The Cricket on the Hearth*, he wrote in 1843 and in 1845. After another year in Italy he tried for a month to edit the *Daily News*, from January to February, 1846, but he had no equipment for editing a newspaper. In June he was in Switzerland, at work on *Dombey and Son* (1848), which, in spite of its popular success, was considered a falling off in one who stood so high. Yet, when men were expecting that he would wane and weaken like other prolific writers before him, he produced *David Copperfield* (1850), a favorite with many, and preferred by Dickens himself to all his other novels. In this novel he adopted the form of an autobiography, and that perhaps offered him some advantages; at all events, the result was admirable. *Bleak House* (1853); *Hard Times* (1854); *Little Dorrit* (1857); *A Tale of Two Cities* (1859); *Great Expectations* (1861), regarded by Swinburne as the best and most artistic of Dickens's books; and *Our Mutual*

Friend (1865), by many readers thought to be his masterpiece, afterward succeeded one another with almost periodical punctuality, and each was awaited by an immense audience. In 1850 he commenced a weekly periodical entitled *Household Words*, and in 1859 a similar publication called *All the Year Round*. In 1858 he began his long series of public readings, which brought him applause and money, but which in the end broke down his health. In 1867 he again visited America, giving numerous readings and meeting with a brilliant reception. He was at the last engaged in writing a new novel, *The Mystery of Edwin Drood*, which was left unfinished. He died at Gadshill, June 9, 1870, and was buried in Westminster Abbey, June 14.

The work of Dickens has been variously estimated. All admit his great humor, but to some his pathos seems much overdrawn. He possessed immense creative power, the number of his characters running into the thousands. The essence of his art is caricature, and for comic effect he exaggerated the abuses he attacked. He was a great amateur actor, of a broad, slightly burlesque type; his method on the stage and on the page was the same. In character building he hit upon some oddity and transformed it into a delightful type never to be forgotten. Consult: Forster, *Life of Dickens* (London, 1872-74); Fields, *Yesterdays with Authors* (Boston, 1872); Kent, *Charles Dickens as an Actor* (London, 1872); *Letters*, ed. by Miss Hogarth and Miss Dickens (ib., 1880-82); Ward, *Dickens* (ib., 1882); Marzials, *Life of Charles Dickens* (1887); Pemberton, *Charles Dickens and the Stage* (ib., 1888); Gissing, *Charles Dickens: A Critical Study* (New York, 1898); Fitzgerald, *The History of Pickwick* (London, 1891); Kitton, *The Novels of Charles Dickens* (ib., 1897); Hughes, *Dickens as an Educator* (New York, 1900); Fitzgerald, *Life of Charles Dickens as Revealed in his Writings* (London, 1905); Chesterton, *Life of Charles Dickens* (New York, 1906); Thomson, *Bibliography* (Warwick, 1904); Lehmann, *Charles Dickens as an Editor* (New York, 1912); Pugh, *The Charles Dickens Originals* (London, 1912); P. H. Fitzgerald, *Memoirs of Charles Dickens* (London and New York, 1914). Essays and editions are numerous. Collected editions appeared in England in 1847, in 1861, and in 1874. One of the most recent editions is Kitton, *The Autograph Edition of Complete Works* (56 vols., New York, 1902).

DICKIE, GEORGE WILLIAM (1844-). An American naval engineer. He was born at Arbroath, Scotland; studied mechanical and naval engineering, came to the United States in 1869, and was connected with steamship designing on the Pacific coast. From 1893 to 1905 he was manager of the Union Iron Works, San Francisco, Cal., and in that capacity became identified with the execution of much naval work for the United States government. In 1905 he became consulting marine and mechanical engineer of San Francisco. He was at one time president of the Technical Society of the Pacific Coast. He wrote *Pumping and Hoisting Works* (1876) and numerous papers and articles.

DICKINS, JOHN (1747-98). An American clergyman. He was born in London and was educated at Eton, but, removing to America before the Revolution, he became one of the

most efficient promoters of the Methodist Episcopal church in this country. A Latin, Greek, and Hebrew scholar, he had much to do with the founding of Cokesbury College at Abingdon, Md., the first institution of higher learning established by the Methodists. He preached in Virginia and North Carolina and in 1783 was sent to New York City to take charge of the John Street congregation. In 1789 he was transferred to Philadelphia, where he established the Methodist Book Concern. This was subsequently removed to New York. The first book published was *The Imitation of Christ* by a Kempis. Dickens did an important work in gathering and publishing the minutes of the annual Methodist conferences. Consult Atkinson, *Centennial History of American Methodism* (New York, 1884); also the volume entitled *Centennial of the Methodist Book Concern* (ib., 1890).

DICKINSON, A city and the county seat of Stark Co., N. Dak., 310 miles west of Fargo, a division point on the Northern Pacific Railroad (Map: North Dakota, B 4). The city contains a Carnegie library, a hospital, and a State agricultural experiment station. Its chief industries are stock raising, milling, the shipping of agricultural implements, wheat growing, and pressed brick works. Clay and lignite coal abound in the surrounding regions. First settled in 1880, its government in 1906 was vested in a mayor, elected biennially, and a unicameral council. It owns and operates its water works. Pop., 1900, 2706; 1910, 3678.

DICKINSON, ANNA ELIZABETH (1842-). An American lecturer, author, and actress, born in Philadelphia. She became prominent through her fiery addresses on total abstinence, abolition, politics, and woman suffrage. After a time she devoted her whole attention to lecturing and to the drama, writing *A Crown of Thorns* (1876), in which she herself played; *True to Herself*, and *What Answer?* (1868), a novel; *Mary Tudor* and *Aurelian*, dramas; and *A Ragged Register of People, Places, and Opinions* (1879). In 1880 Fanny Davenport appeared with success in her *American Girl*.

DICKINSON, DANIEL STEVENS (1800-66). An American statesman, born in Goshen, Conn. He was admitted to the bar in 1828, was elected to the Senate of New York State in 1836, became Lieutenant Governor in 1842, and in 1844 was appointed by the Governor to a vacancy in the United States Senate. In 1861 he was elected Attorney-General of New York, and in 1865 was appointed district attorney for the southern district of the State. During the Civil War he actively supported the cause of the government. He was an able debater, and for a time leader of the Democratic party in New York. In the Republican National Convention of 1864 he received 108 votes for the vice-presidential nomination. Consult Dickinson's *Life and Works* (2 vols., New York, 1867).

DICKINSON, DONALD McDONALD (1846-). An American lawyer and politician. He was born at Port Ontario, N. Y., graduated at the University of Michigan in 1867, and was admitted to the bar in the same year. He was Postmaster-General in 1888-89, chairman of the National Democratic Campaign Committee in 1892, and senior counsel for the United States before the Bering Sea Claims Commission in 1896-97. He was a member of the Court of

Arbitration to adjust the controversy between the United States and the Republic of Salvador in 1902.

DICKINSON, EMILY (1830-86). An American poet, born at Amherst, Mass. She lived a secluded life and published almost nothing during her lifetime. At her death T. W. Higginson, with Mrs. Mabel Loomis Todd, edited a volume entitled *Poems by Emily Dickinson* (1890), which attracted considerable attention and was followed by another volume of poems as well as by a volume of selected letters. In thought her introspective lyrics are striking, but are deficient in form. Her *Letters* (ed. by Mabel L. Todd) appeared in 1906.

DICKINSON, G(OLDSWORTHY) LOWES. An English writer on historical and religious topics, son of a well-known artist, Lowes Dickinson. He was educated at the Charterhouse and at King's College, Cambridge, of which he became fellow and lecturer. He also lectured at the London School of Economics and Political Science. Particularly felicitous in his use of the dialogue as a literary form, he wrote: *The Greek View of Life* (1890, 3d ed., 1906); *From King to King: The Tragedy of the Puritan Revolution* (1891; 2d ed., 1907), dialogues; *Revolution and Reaction in Modern France* (1892); *The Development of Parliament During the Nineteenth Century* (1895). *Letters from a Chinese Official* (1903; in England, 1901, called *Letters of John Chinaman*), which came out anonymously, being reprinted from the *Saturday Review*, and which was answered by William Jennings Bryan in his *Letters to a Chinese Official* (1906), taking seriously the Chinese authorship; *Religion: A Criticism and a Forecast* (1905); *A Modern Symposium* (1905) on philosophic schools of thought; *Justice and Liberty* (1908); *Is Immortality Desirable?* (1909), the Howard Ingersoll Lectures; *Religion and Immortality* (1911). Consult Chesterton's *Heretics* (London, 1909) for an interesting, but unsympathetic criticism of "Paganism and Mr Lowes Dickinson," and More, *Shelburne Essays*, vol. vii (New York, 1910).

DICKINSON, JACOB MCGAVOCK (1851-). An American lawyer and cabinet officer, born at Columbus, Miss. After graduating from the University of Nashville in 1871, he studied law at Columbia Law School, the University of Leipzig, and in Paris. Admitted to the bar in 1874 he practiced in Nashville until 1899 and in Chicago from 1899 to 1909. Several times he was called upon to serve on the supreme bench of Tennessee by special commission. He was also Assistant Attorney-General of the United States (1895-97), Federal solicitor (1899-1901), and general counsel (1901-09) of the Illinois Central Railroad Company, and counsel for the United States before the Alaskan Boundary Tribunal (1903). From 1909 to 1911 he was Secretary for War in the cabinet of President Taft. He served as president of the American Bar Association in 1907-08.

DICKINSON, JOHN (1732-1808). An American statesman and publicist, known as the "Penman of the Revolution." He was born in Talbot Co., Md., but in 1740 removed with his father to Delaware. He began the study of the law in Philadelphia in 1750; entered the Middle Temple, London, England, in 1753, and in 1757 began practice in Philadelphia. In 1760 he became a member of the Delaware Assembly and in 1762 was elected to the Pennsylvania Assem-

bly, where he served with great distinction until 1765 and again from 1770 to 1776. He was also a member of the Stamp Act Congress and from 1774 to 1776 of the Continental Congress; served for a time in the American army, first as a private and afterward as a brigadier general in the Delaware militia; was Governor of Delaware from 1781 to 1782, again a member of the Continental Congress in 1779-80, and Governor of Pennsylvania from 1782 to 1785; and afterward took a prominent part in the debates of the Constitutional Convention of 1787, and in the discussions in Pennsylvania and Delaware over the ratification of the Constitution. He is best known, however, as a writer of state papers and pamphlets, in which capacity up to 1776 he ranked foremost among his contemporaries. Among the important state papers which he drafted or wrote were the "Resolutions in relation to the Stamp Act," adopted by the Pennsylvania Assembly in 1765; the "Declaration of Rights" and the "Petition to the King," adopted by the Stamp Act Congress; the "Essay on the Constitutional Power of Great Britain over the Colonies in America," adopted by the Pennsylvania Convention; the "Address of Congress to the Inhabitants of the Province of Quebec"; the "Petition of Congress to the King"; the "Declaration by the United Colonies of North America . . . Setting Forth the Causes and Necessity of Their Taking up Arms"; the "Articles of Confederation" (first draft); and the "Address of Congress to the Several States on the Present Situation of Affairs" (1779). In addition, he wrote numerous pamphlets and newspaper articles, the most famous of which were the celebrated *Farmer's Letters*, published at Philadelphia in 1767. These "letters" had a wide circulation and produced such an effect on both sides of the Atlantic that their appearance has been regarded as "the most brilliant event in the literary history of the Revolution." Dickinson's influence waned after 1776 on account of his opposition to the Declaration of Independence, which he refused to sign; but a series of papers written by him in 1787-88, under the pseudonym "Fabi-us," were widely read and contributed much towards inducing Pennsylvania and Delaware to ratify the Constitution. In the literature of the Revolution, says Ford, the editor of Dickinson's writings, he was "as preëminent as Washington in the war, Franklin in diplomacy, and Morris in finance." He helped to found Dickinson College at Carlisle, Pa., in 1783. His *Writings*, edited by Paul L. Ford, were published, in part, at Philadelphia in 1895. Consult Stillé, *The Life and Times of John Dickinson* (Philadelphia, 1891), and an excellent estimate of Dickinson's literary work in Tyler, *Literary History of the American Revolution* (New York, 1897).

DICKINSON, JONATHAN (1688-1747). An American clergyman. He was born in Hatfield, Mass., and graduated at Yale in 1706. He was for 30 years a Presbyterian minister in Elizabethtown, N. J., and was a leader in this denomination. In 1746 he became president of the College of New Jersey (now Princeton University), and its first sessions were in his home in Elizabeth. He wrote a number of theological works, collected at Edinburgh (1793).

DICKINSON COLLEGE. An institution for higher education, founded in 1783, under the auspices of the Presbyterian church at Carlisle,

Pa. The charter of the college was granted by the General Assembly of the State as a result of an appeal made by the leading men of the Commonwealth, including Benjamin Rush and John Dickinson. It was named after the latter "in memory of the great and important services rendered to his country . . . and for the commemoration of his very liberal donation to the institution." This donation was a plantation of 200 acres in York County, another 500 acres in Cumberland County, \$500 in cash, and a number of valuable books. The college began its work on April 6, 1784. Its first president was Rev. Charles Nisbet, D.D., and the faculty included, in addition to him, four instructors. In 1798 the present site of the college, comprising a town square, was purchased from the Penna for \$150. The first building erected on the site was destroyed by fire before its completion. By popular subscription funds were raised to erect another building, completed in 1804. This is known as West College. The college continued under Presbyterian auspices until 1833, when, on account of difficulties which overtook it, representatives of the Methodist Episcopal church agreed to become responsible for its continuance, and a board of trustees composed of representative Methodists, with Bishop John Emory as chairman, was elected. The college has since been under Methodist Episcopal auspices. In addition to West College, the college buildings are South College (1835), East College (1836); the Law School (1877), Tome Scientific Building (1884), Gymnasium (1884), Boesler Memorial Library Hall (1885), Denny Memorial Hall (1896). The college has adhered to approved courses of study based upon four years of preparation in a good preparatory school. The degrees given by the college *in cursu* are B.A. and B.S. The students numbered in 1913-14 about 325, and the faculty 15. The annual income amounts to about \$50,000. The president in 1914 was Eugene A. Noble.

DICK'S COFFEE HOUSE. A London coffee house, originally called "Richard's," after Richard Torner or Turner, who was its first proprietor (1680). The building still stands, on the south side of Fleet Street (No. 8), near the Temple.

DICKSON, SIR JAMES ROBERT (1832-1901). An Australian statesman. He was born at Plymouth, England, was educated in Glasgow, Scotland, and worked in the City of Glasgow Bank. He emigrated to Victoria in 1854, whence he removed to New South Wales and in 1862 to Queensland. In 1872 he was elected to the Queensland House of Assembly. In 1876 he entered the cabinet of Arthur Macalister as Minister of Public Works. He was Treasurer of the colony from 1876 to 1879 and from 1883 to 1887. From 1889 to 1892 he lived in Europe, returning in the latter year to conduct a campaign in favor of Polynesian labor in the Queensland sugar plantations. He was elected to the House of Assembly in 1892, 1893, and 1896. In 1897 he entered the Nelson cabinet as Secretary for Railways. In March, 1898, he became Secretary for Home Affairs, and in October following became Premier. He fought for an Australian commonwealth, secured a referendum of the question to the people, and after an active campaign obtained a majority at the polls in favor of federation. He resigned the premiership in November, 1899, but in December

became Chief Secretary in Robert Philp's ministry, and early in 1900 visited London as a delegate from Queensland to discuss the affairs of the proposed commonwealth. On his return to Australia he was selected Minister of Defense in the first federal cabinet and was made K.C.M.G., but died about a week after the inauguration of the new government.

DICKSON, LEONARD EUGENE (1874-). An American mathematician, born at Independence, Iowa. After graduating from the University of Texas in 1893, he studied at the universities of Chicago, Paris, and Leipzig. He was instructor and assistant professor of mathematics in 1897-99 at the University of California, associate professor for a year at the University of Texas, and then assistant and associate professor at the University of Chicago until 1910, when he was appointed to a full professorship. He was also research assistant at the Carnegie Institution at Washington (1900). He became in 1910 one of the editors of the *Transactions of the American Mathematical Society* (of which he was a vice president in 1909-10), and of the *American Mathematical Monthly*. His publications include: *College Algebra* (1902); *Introduction to the Theory of Algebraic Equations* (1903); *Elementary Theory of Equations* (1914).

DICKSON, deK'sön, BARON OSKAR VON (1823-97). A Swedish merchant. He was born at Göteborg, of Scottish ancestry. He was a member of many learned societies, both in London and abroad, and gave liberal pecuniary support to North Pole enterprises, particularly those undertaken by Baron Nordenskjöld after 1868. In recognition of his distinguished public services he was ennobled in 1880, the title or Baron being conferred on him in 1885. Dickson Harbor and various other points in the Arctic regions have been named in his honor.

DICKSON, SAMUEL HENRY (1798-1872). An American physician. He was born in Charleston, S. C., graduated at Yale in 1814, and in 1819 received the degree of M.D. at the University of Pennsylvania. He was appointed to the professorship of the institutes and practice of medicine in the medical school of Charleston, S. C., in 1824; was professor of the practice of medicine in the University of New York from 1847 to 1850; in 1858 accepted the chair of the practice of medicine at Jefferson College in Philadelphia. His publications include: *Elements of Medicine* (1835); *Essays on Life, Sleep, Pain, etc.* (1852); *Studies in Pathology and Therapeutics* (1867).

DICKSON, WILLIAM PURDIE, D.D. (1823-1901). A Church of Scotland theologian. He was born at Pettinain Manse, Lanarkshire, Oct. 22, 1823; graduated at St. Andrews; was from 1863 to 1895 a divinity professor in Glasgow University, and then professor emeritus. Besides translating Mommsen's *History of Rome* (4 vols., rev. ed., 1895) and *Roman Provinces* (1887), and Meyer's *Commentary on the New Testament* (10 vols., 1873-80), he delivered the Baird lectures of 1883, *St. Paul's Use of the Terms Flesh and Spirit* (1883).

DICKSON CITY. A borough in Lackawanna Co., Pa., 4 miles north of Scranton, on the Delaware and Hudson Company, and the New York, Ontario, and Western railroads (Map: Pennsylvania, K 3). It is in a coal-mining region and has foundries and machine shops and silk mills. It is governed by a burgess and a unicameral

DICOTYLEDONS



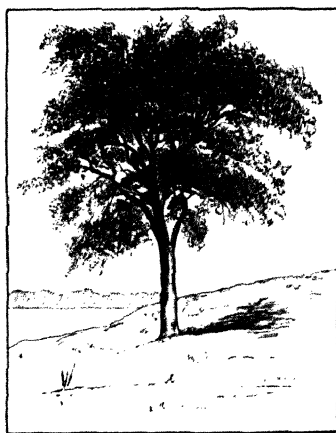
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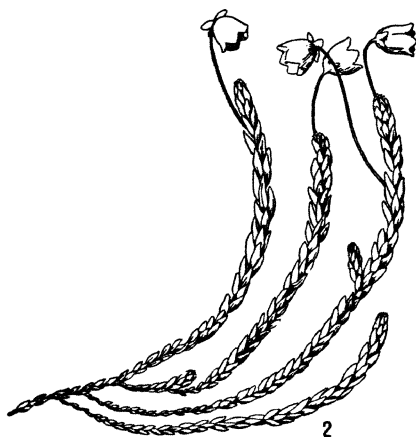


4

1. CARROT (*Daucus Carota*).
2. BUTTERCUP (*Ranunculus* sp.).

3. RED CLOVER (*Trifolium pratense*).
4. ELM TREE (*Ulmus* sp.).

DICOTYLEDONS



1. MORNING-GLORY (*Ipomoea* sp.).

2. A HEATHER (*Calluna* sp.).

3. ARNICA (*Arnica* sp.); *a*, general habit; *b*, ray-flower; *c*, disk-flower.

4. CATNIP (*Nepeta Cataria*); *a*, general habit; *b*, single flower.

council. Pop., 1900, 4948; 1910, 9331; 1914 (U. S. est.), 11,198.

DICLINOUS PLANT (Gk. *di-*, *di-*, double + *κλίσις*, *klinein*, to incline). A plant which has stamens and pistils in separate flowers. If the two kinds of flowers are on the same individual, the plant is called monœcious; if on different individuals, dioecious. See **POLLINATION**.

DICOTYLEDONS (Neo-Lat., from Gk. *di-*, *di-*, double + *κοτυλήδων*, *kotylēdōn*, cup-shaped, hollow, from *κοτύλη*, *kotylē*, cavity). One of the two great divisions of Angiosperms (q.v.). The Angiosperms are the most advanced, the most recent, the most conspicuous, and the most useful of plants. Approximately 130,000 species of Angiosperms have been described, about 105,000 of which are Dicotyledons. The chief characters which distinguish them from Monocotyledons, the other group of Angiosperms, are an embryo with lateral cotyledons (usually two); the vascular bundles of the stem forming a hollow cylinder, which means an annual increase in the diameter of woody stems; an open system of venation, which means that the veinlets end freely in the tissues of the leaf or in the margins, often resulting in various forms of toothed, lobing, and branching; and flowers whose tendency is to display their parts in fives or fours or their multiples.

Two great groups of Dicotyledons are recognized—the Archichlamydeæ and the Sympetaleæ. In the former there is either no perianth (calyx and corolla), or its parts are separate (polypetalous); in the latter the corolla is sympetalous (petals coalesced). Formerly the Archichlamydeæ were divided into two groups—the Apetaleæ, in which there are no petals, and the Polypetalæ, in which petals are present; but this division has been found to be too artificial to stand, as several natural families have both apetalous and polypetalous members.

Archichlamydeæ. This vast group contains approximately 62,000 species and 180 families. They are the primitive Angiosperms from which both the Monocotyledons and the Sympetaleæ have been derived. At present they are grouped under 26 great orders. The first 12 orders, including about 6000 species, include many of the most common trees, as willows, walnuts, beeches, oaks, etc. Many of these were formerly grouped as Amentifera, a name referring to the characteristic flower cluster called ament, or catkin. This group of 12 orders does not seem to be related to any of the higher ones. Orders 13 and 14 also represent an apparently isolated group, including such plants as smartweeds, pigweeds, pinks, etc. Order 15 (Ranales), with approximately 4000 species, is the great genetic order, which means that all the higher orders are thought to have been derived from it. Familiar families are buttercups, water lilies, magnolias. This order has not only given rise to the higher Archichlamydeæ and to the Sympetaleæ, but also to the Monocotyledons. Orders 16 and 17, with approximately 3000 species, represent special branches from Ranales, the most specialized one probably being the mustards. Order 18 (Rosales), with over 15,000 species, is the greatest one among the Archichlamydeæ, with approximately 12,000 species. Another prominent family is the rose family, which gives the name to the order. Orders 19-25, including nearly 30,000 species, represent a tangle of relationships leading off

in every direction from the preceding order. Order 26 (Umbellales), with over 25,000 species, is the highest one of the Archichlamydeæ. The dominant family is the parsley family, and associated with it are the dogwoods.

Sympetaleæ. This is a much better defined group than the Archichlamydeæ, from which it is derived, including approximately 43,000 species in 51 families, which are grouped under eight orders. The sequence of orders from lowest to highest is as follows: Ericales, with approximately 1700 species, include the heaths, so characteristic of northern latitudes. Primulales, with approximately 1000 species, are represented by the primroses. Ebenales, with nearly 1000 species, are mostly tropical shrubs and trees, represented in the northern flora by the persimmon, but, as the name suggests, the characteristic family is the ebony family. Gentianales, with over 4000 species, are characterized by the gentians, from which the highly specialized milkweeds have come. Tubiflorales, with nearly 15,000 species, include those plants with conspicuous tubular corollas which are often irregular, and are represented by morning glories, polemoniums, mints, figworts, etc. Plantaginiales, containing only about 200 species, comprises only the cosmopolitan plantains. Rubiales, with nearly 5000 species, are characterized by the madders, and associated with them are the honeysuckles. Finally, the Campanales, with about 14,500 species, stand as the highest order of Angiosperms, which means the culmination of the plant kingdom. The dominant family is known as the Compositæ, which includes such forms as sunflowers, asters, goldenrods, dandelions, etc. This great family is not only highest in rank, but greatest in numbers, including 12,500 species.

DICTAMNUS. See **DITTANY**.

DICTATOR (Lat., from *dictare*, to dictate, frequentative of *dicere*, to say). In the earliest times, the name of the highest magistrate of the Latin confederation; and in some of the Latin towns the title was continued long after these towns were subjected to the dominion of Rome. In the Roman Republic the dictator was an extraordinary magistrate, irresponsible and endowed with absolute authority, whose original name was *magister populi*. This title, it has been suggested, described the dictator as head of the (infantry) host; at any rate, his chief subordinate was regularly known as *magister equitum*. In this view the dictatorship was a military office. Later, at times a dictator was appointed to suppress civil strife. The frequency of *crises*, or critical periods, in the quick, aggressive growth of the Roman state, necessitated such an office. The first dictator (T. Larcus or M. Valerius) was appointed in 501 B.C., nine years after the expulsion of the Tarquins. According to Livy, the immediate cause of this dictatorship was a formidable war with the Latins. In general no one could be appointed dictator who had not been previously consul, and this condition was very rarely dispensed with. It is possible that the dictator was originally created or elected by the curiæ, like the kings; but it is more probable that the Senate passed a decree ordering one of the consuls to name or proclaim (*dicere*) a dictator. Originally, of course, the dictator was a patrician; the first plebeian to fill the office was Marcus Rutilius (355 B.C.), who was nominated by the plebeian consul, M. Popillius Lænas.

The dictatorship could not lawfully be held longer than six months; nor was it ever held for a longer period, except in the cases of Sulla and Cæsar, which were altogether peculiar. During a dictatorship the consuls and other regular authorities continued to discharge their proper duties, but in subordination to the dictator, being for the time simply his officers. The superiority of his power, when compared with that of the consuls, appears chiefly in three points: he was far more independent of the Senate; he had a more extensive power of punishment, without any appeal; and he could not be called to account after his abdication of the dictatorship for anything he had done during the period of his office. The limits of his power were as follows: he could not touch the treasury; he could not leave Italy; and he could not ride through Rome on horseback without previously obtaining the permission of the people. While the consuls had only 12 lictors, the dictator was preceded by 24, bearing the *securæ* and *fasces*. To him also belonged the *sella curulis* and the *toga prætexta*. The last legally elected dictator was M. Junius Pera, who entered on his office 216 B.C. From this time nominal dictators were frequently appointed for the purpose of holding the elections, but even these finally disappeared (202 B.C.). Henceforth, in critical times, a sort of dictatorial power was conferred on the consuls by the Senate by the well-known formula: "That the consuls should see to it that the state should receive no damage." This practice rendered the appointment of dictators no longer necessary. In 44 B.C. Antonius carried a law making the dictatorship no longer a part of the Roman constitution. Consult Mommsen, *Römische Staatsrecht*, ii, 133 ff. (3d ed., Leipzig, 1887), and Greenidge, *Roman Public Life* (London, 1907).

The term is loosely applied in modern use to a ruler enjoying or exercising extraconstitutional power. Gen. Porfirio Diaz and Gen. Venustiano Huerta were styled Mexican dictators.

DICTIONARY (ML. *dictionarius*, word book, from Lat. *dictio*, word, from *dicere*, to say). In its original and most common application, a work which is linguistic in character, being a compilation of all or a portion of the words of a language arranged according to some exact order, usually the alphabetical one, with brief explanations and definitions. In later and more elaborate dictionaries additional information of an appropriate character is included within the scope of the work. Thus, etymologies, indications of pronunciation, and variations in orthography may be given, while a still further expansion includes citations which illustrate the uses of words. The name is said to have been used for the first time by Joannes de Garlandia, who died in 1252 A.D. He described his book containing a classified list of words as a *dictionarius*. In its use the word "dictionary" is no longer confined to a simple linguistic compilation, but is applicable to works on special or technical subjects, which, through the medium of an alphabetical classification of words belonging to that subject, give appropriate and detailed information. Such dictionaries are very numerous; and we have biographical, historical, bibliographical, geographical, philosophical, mathematical, zoological, medical, musical, architectural, and other dictionaries.

The following terms are more or less synonymous with the word "dictionary": *vocabulary*, which is a list of words restricted to a single work or to some division of the language, e.g., the vocabulary of Cæsar's *Gallie War*; *lexicon*, a word applied by English-speaking peoples to a dictionary of some foreign language, as Hebrew, Greek, or Latin; *glossary*, a partial dictionary of words of a certain dialect or of antiquated or technical terms accompanied by glosses or explanations; *thesaurus* (*verborum*)—i.e., a treasury of words—an elaborate dictionary with many references and full explanations. More unfamiliar are *idioticon*, from Greek *ἰδιώτης*, *idiōtikos*, belonging to an individual, and *onomasticon*; the former, common in Germany, indicates a dictionary of words of a dialect; the latter, from the Greek *ὄνομα*, *onoma*, name, is a dictionary of names, as the *Onomasticon* of Julius Pollux of the second century—a Greek dictionary in 10 books containing words arranged according to their meaning. *Index* (q.v.) is a list of names, topics, etc., generally placed at the close of a book to indicate more exactly and definitely the contents thereof. The *gazetteer* and *concordance* should be mentioned as having certain characteristics of dictionaries. The first is a geographical dictionary with names of places, seas, rivers, etc., in alphabetical order, accompanied with a brief account of each. The word "gazetteer" was first used by Lawrence Echard, whose work was entitled *The Gazetteer; or, Newsmen's Interpreter—A Geographical Index* (11th ed., London, 1716). In part ii the author speaks of his work as "The Gazetteer." A concordance is an index of various passages in a book classified according to certain leading words arranged in an alphabetical order. As this was first made for the Bible, Johnson defines it as "a book which shows in how many texts of Scripture any word occurs." As examples, we may cite: Cruden, *A Complete Concordance to the Old and New Testaments* (London, 1859); Clarke, *Concordance to Shakespeare* (ib., 1827); Brightwell, *A Concordance to the Entire Works of Alfred Tennyson* (ib., 1869).

History. The earliest dictionary of which there is any mention is that made in Nineveh in the reign of Assurbanipal in the seventh century B.C., which is impressed on a number of clay tablets in cuneiform letters. Arabic scholars early busied themselves with dictionary making, a work very necessary for a language as rich as theirs. The first to attempt to gather the entire Arabic vocabulary in one work was probably Khalil ibn Ahmed of Oman (died 791), who adopted an arrangement not alphabetical, but one based on certain phonetic and physiological principles. The worthiest of Khalil's many successors were Mukarram ibn Mansur, an Egyptian (died 1311), and al-Firuzabadi, a Persian by birth, whose travels entitled him to be called a citizen of the Oriental world (died 1414). The work of the former (Cairo, 1300 et seq.) filled 20 volumes, while the *Camus* ('dictionary') of the latter, preserved only in part, extended to 60 (according to some accounts, to 100) volumes. While in a certain sense Hebrew lexicography began with the Massoretic (sixth to eighth centuries), the real production of Hebrew dictionaries began in the tenth century, taking its origin in, and being stimulated by, the study of Arabic. Rabbi Saadia Gaon (died 942) was the first Hebrew lexicographer;

David Kimchi (c.1200), author of the *Book of Roots*, was the greatest. Menahem ben Sarug (c.960) made a dictionary arranged according to stems. Judah Hayyuj (c.1000) propounded the theory of triliteral roots, and his work was continued by Rabbi Jonah (Ibn Janah, c.1030). Sanskrit dictionaries begin at a very early date in the glossary of Yaska to the Rig-Veda (about the fifth century B.C.) and continue to be for the most part collections of rare words and meanings, being designed especially for the authors who composed the artificial poetry so prevalent in India. These dictionaries, most of them written after the fifth century A.D., are invariably in verse and are divisible into the two general classes—lexicons of synonyms and homonyms. Alphabetical arrangement begins only in the latter period of the homonymous dictionaries. The older works of this class arrange the words in order of importance, while in the synonymous dictionaries words are classified according to subjects. Other modes of classification are according to the number of syllables in the word, its gender, or its final letter.

The number of native Sanskrit lexicons is over 50, and of them the *Amara-kōṣa* (see AMARASINHA) is the most frequently quoted. There are also special dictionaries on botany, medicine, and astronomy, as well as Buddhist glossaries in Pali, and polyglot lexicons in Sanskrit, Tibetan, Mongolian, and even Chinese. (Consult Zachariae, *Indische Wörterbücher*, Strassburg, 1897.) Of Old and Middle Iranian (Avestan and Pahlavi) there are but two native dictionaries—one Avestan-Pahlavi, and the other Pahlavi-Pazand (both edited by Haug and Jamaspji, Bombay and London, 1867-70; the former also by Reichelt, Vienna, 1900). In Modern Persian there is a long list of lexicons, both general and special, based upon Arabic models, the oldest one, perhaps, written by Asadi, Firdusi's teacher, dating from the eleventh century. In the classical languages, Greek and Latin, we find evidences of lexicographical work at an early period.

But dictionaries of language in a form with which we are familiar are of modern origin. They are an outgrowth of the importance of Greek and Latin literature to the scholars of the Middle Ages and may be traced to the mediæval custom of inserting marginal glosses or explanatory words in texts of classical authors. The bilingual dictionary in particular is due to the closer intercourse of the various nations of the more modern world. The Greeks and Romans did not conceive of a work containing all the words of their own or of a foreign language, and their early dictionaries were simply glossaries of unusual words or phrases. Athenæus tells of Alexandrian scholars such as Zenodotus, librarian of the great library, who compiled books containing foreign phrases and a glossary of Homer; and of Artemidorus of 240 B.C., who prepared a book of technical terms on cooking. All these have been lost. According to Suidas, Apollonius, the Sophist of the days of Augustus, wrote the earliest Greek lexicon, which was entitled *Ἄλφειν Ὀμῆρικαι*, (*Lexicæ Homériques*), or *Homeric Words*, published last by Bekker, of Berlin, in 1833. This is the most ancient dictionary extant. Other Alexandrian lexicographers were Elius Meris (190 A.D.); the Atticist, who wrote a Greek (Attic) lexicon (ed. by Hudson, Oxford, 1712),

and Harpocration (fourth century), who composed a lexicon of the Attic orators (ed. by Dindorf, ib., 1853).

Ammonius, professor of grammar at Alexandria, prepared a book of homonyms, published by Valekenær in 1739 (also Leipzig, 1822). In this same book is edited the work of Zenodotus on the cries of animals, which is similar to Vincenzo Carlucci's *Lexicon Vocum quæ a Brutis Animalibus Emittuntur* (Perugia, 1779). Hesychius of Alexandria, of the latter part of the fifth century A.D., wrote a lexicon, based supposedly on that of Pamphilus (another Alexandrian grammarian), containing short explanations of Greek words with quotations from authors. The first edition is the Aldine (Venice, 1514); the latest, that of Schmidt (Jena, 1867). Orion, of Thebes, Egypt, of about the same period, wrote an etymological dictionary, which was last printed in 1820 at Leipzig by Sturz. Erotian, a physician of Nero, prepared a lexicon on Hippocrates arranged in alphabetical order by a later writer and edited by Klein at Leipzig in 1805. Julius Pollux, of Naucratis, Egypt, who was made professor of rhetoric at Athens by the Emperor Commodus, wrote the *Onomasticon* referred to above, which is a work of great value for the language and for the study of antiquities. It first appeared in the Aldine edition (Venice, 1500) and long after (1824) in a Leipzig edition by Dindorf. The most famous of Greek writers of glossaries is Suidas, whose period is thought to be the tenth century A.D. He prepared an alphabetical dictionary of words, with place and personal names and many quotations from Greek writers and scholars. This book was first printed at Milan in 1499 and again in an excellent edition by Bernhardy at Halle in 1833. Other Byzantine lexicographers are Photius of the ninth century (ed. by Naber, Leyden, 1864), and John Zonaras, a celebrated twelfth-century historian and theologian (ed. by Tittmann, Leipzig, 1808). In 1848 Gaisford, at Oxford, published a Greek glossary of the eleventh century known as *Etymologicum Magnum*, which contains numerous passages from various famous writers and copious historical and mythological references. Eudocia Augusta, of Macrembolis, wife of Constantine XI and Romanus IV (1059-71), is credited with the compilation of an historical and mythological dictionary which she called *Ἱστορίαι, Ἰόνισα, 'Bed of Violets.'* In the work of Crastoni, a native of Piacenza, we have the first Greek and Latin lexicon. There is an Aldine edition of 1497. To the same time belong Guarini's *Thesaurus* and a similar work by Thomas, who was known as the monk Theodolus. In 1572 at Geneva appeared the *Thesaurus Græcæ Linguae* of Henri Estienne (Stephanus), reedited by Valpy at London in 1816-26 (6 vols.) and by Dindorf at Paris in 1831-65 (9 vols.). This is the most complete Greek lexicon ever published. The first Greek-English lexicon is that of John Jones (London, 1823), although the work of John Pickering, which was not completed, bears the date 1814. The most useful Greek-English lexicon is the Liddell and Scott (8th ed., New York, 1897); also in abridged form. Pape, *Wörterbuch der griechischen Eigennamen* (Brunswick, 1875-80) is of value for proper names. Special Greek lexicons worthy of mention are: *Greek-English Lexicon of the New Testament*, by J. H. Thayer, a revision of Grimm's Wilke's *Clavis Novi Testamenti* (London, 1889); *Greek Lexicon of the*

Roman and Byzantine Periods, by E. A. Sophocles, revised by J. H. Thayer (ib. 1887), and for modern Greek, *Δεξιόν Ἑλληνοαγγλικόν*, Modern-Greek-English and English-Modern-Greek, by Contopoulos (3d ed., Athens, 1889).

In Latin lexicography we think first of M. Terentius Varro, who wrote *De Lingua Latina*, a work on etymology and the uses of words; then of Verrius Flaccus, living in the days of Augustus, who wrote *De Verborum Significatu*, which is extant in the compilation of Pompeius Festus, entitled *De Significatione Verborum*, abridged by Paulus Diaconus of the eighth century. This work, in which the words are arranged alphabetically, has been of great service in giving information on antiquities and grammar. Less familiar are the dictionary of Papias of the eleventh century, based on glossaries of the sixth and seventh, and the *Catholicon* or *Summa* of Giovanni Balbi, dating about 1286 and, as printed by Gutenberg in 1460, now a curiosity. It passed through 20 editions. The earliest polyglot was the work of an Augustine monk, Colepinus, dated at Reggio, 1502. At first it was a Latin-Greek lexicon, then came to be extended to include Italian, French, and Spanish, and finally in the 1590 Basel edition it included 11 languages. The great Latin dictionaries are *Thesaurus Lingue Latine* of Robert Estienne (Paris, 1531, reëdited down to 1734), and the *Totius Lexicon Latinitatis* by Forcellini (Padua, 1771, an edition published with the names of Faccioliati and Forcellini as editors; 3d ed., 1831). In this work the Latin words are given Greek and Italian equivalents and are illustrated by examples from classical literature. The latest (fifth) edition is that of De Vit (Prato, 1858-79), with the *Onomasticon Totius Latinitatis* as a supplement. This is the greatest of all Latin lexicons. The first Latin-English lexicon of any account was edited by Sir Thomas Elyot (London, 1538; 3d ed., 1545). Before this there had appeared the *Promptorium Parvulorum* by Galfridus Grammaticus (1409), the *Medulla Grammatica* in manuscript (1483), and the *Ortus Vocabulorum* of Wynkyn de Worde (1500), of which there were 13 editions between 1509 and 1523. Then in 1552 a Richard Huloet published his *English-Latin Abecedarium*, with English definitions; in 1570 appeared *Manipulus Vocabulorum Puerorum*, a rhyming dictionary of English and Latin words by Peter Levins; and finally came the *Alvearie* by John Baret, which had three languages—English, Latin, French. In 1736 Robert Ainsworth published his *Latin-English Dictionary*, which passed through many editions. The best Latin lexicons of to-day are: *Latin-English Dictionary*, White and Riddle (London, 1880), and *English-Latin Dictionary* (ib. 1869); Harper's *Latin Dictionary*, which is based on Freund's *Latin-German Lexicon*, in English, by Andrews (New York, 1856), and which is revised by Lewis and Short (ib., 1886); Georges, *Deutsch-Lateinisches und Lateinisch-Deutsches Wörterbuch* (4 vols., Leipzig, 1880-85). This last is most accurate and satisfactory and, next to the Forcellini, contains the most words of all Latin lexicons. The greatest Latin lexicon of modern times is the *Thesaurus Lingue Latine* (Leipzig, 1900 et seq.), which is due mainly to the genius of Edward Wölfflin of Munich. It is edited, under the supervision of the five great German academies—those of Berlin, Göttingen, Leipzig, Munich, and Vienna—by the most distinguished

classical scholars of Germany. For mediæval Latin the only lexicon of importance is the *Du Cange, Glossarium ad Scriptores Mediæ et Infimæ Latinitatis* (1733-36, ed. by Henschel; 16 vols., Paris, 1882-88).

English Dictionaries. The earliest work on lexicography in England aimed to extend our knowledge of Latin. To such an aim are due the Latin-English dictionaries of the latter period of the fifteenth century and the beginning of the sixteenth, mentioned above. With a similar purpose Minsheu in 1617 published his great polyglot *Guide to the Tongues*, explaining English words by those from 10 foreign languages. The *English Expositor* of John Bullokar (1616) was the first English dictionary in the strict sense of the term, as it gave both words and definitions in English. In the seventeenth century we find the *English Dictionarie* of Henry Cockeram (1623); the *Glossographia* of Thomas Blount (1656); *The New World of English Words* by Phillips (1658); and the *English Dictionary* of Elisha Coles (1677). In the early part of the eighteenth century appeared the first dictionary aiming to give a complete collection of words of the language—the *Universal Etymological English Dictionary* of Nathan Bailey (1721). In his preface to the first volume the author declares that he is the first to attempt in English to trace the derivation of English words on a large scale, although he refers to the work of Blount in his *Glossography* and to that of Skinner in his *Etymologicon* (1671). He also marked accents to aid in pronunciation. Bailey's dictionary passed through 24 editions before the close of the century and was the standard until the publication of Johnson's Dictionary. In 1755 Dr. Samuel Johnson, after seven years of labor, published his famous dictionary. This was a most remarkable achievement and was epoch-making in the history of the language, for it determined the form, meaning, and use of English words. Dr. Johnson also introduced the custom of illustrating the use of words by quotations from the best writers. This work passed through many editions, of which the last is that of Robert Gordon Latham (London, 1866), which is to-day only of historic interest. Johnson's Dictionary simply imitated Bailey's in the use of accents to indicate pronunciation. The first dictionary to give attention to orthoëpy is that of Kenrick (London, 1773). Perry, *Royal Standard English Dictionary* (Boston, 1777), and the *Complete Dictionary of the English Language* by the famous elocutionist, Thomas Sheridan (London, 1780), followed suit. The object of the latter work is stated to be "to establish a plain and permanent standard of pronunciation." In 1791 John Walker published his *Critical Pronouncing Dictionary and Expositor of the English Language*. In this work pronunciation is the main object, the author declaring his design to be "to give a kind of history of pronunciation and to register its present state." This dictionary has had a wide circulation and still has a reputation, although it is not, of course, a reliable guide for present-day pronunciation, but rather supplies information as to the pronunciation at the beginning of the nineteenth century. In 1836 B. H. Smart published his *New Critical Pronouncing Dictionary of the English Language*, designated also as "Walker Remodelled." *The New Dictionary* by Richardson, published also in London

in 1836 (new ed., New York, 1863), is valuable for many citations from authors in chronological arrangement, which have, unfortunately, been abridged in the later edition. The *Imperial Dictionary of the English Language* by John Ogilvie (London, 1850) is an encyclopedic lexicon—literary, scientific, and technological. A new edition by Charles Annandale was published in 1883. This formed the model of the *Century Dictionary*, mentioned below. Similar to the *Imperial Dictionary* is the *Encyclopedic Dictionary* by Robert Hunter (London, 1879-88). In 1806 Noah Webster published his *Compendious Dictionary*, and in 1828 he brought out his great *American Dictionary of the English Language*, which was followed by abridged editions. Besides many editions containing minor changes, complete revisions of the large dictionary were made in 1847 by Chauncey A. Goodrich and in 1864 and 1890 by Noah Porter. Its present name is *Webster's New International Dictionary* (copyright, 1909). This is a complete revision of the entire work. It has an appendix with a valuable introduction and a pronouncing biographical dictionary and pronouncing gazetteer. The Webster dictionaries were the pioneer works in lexicography in the United States. The *Dictionary of the English Language*, by Joseph E. Worcester, dates from 1859 and was last revised in 1881, so that it is now largely out of date. The last edition (1886) contains a supplement of 12,500 words. The introduction contains a History of English Lexicography and a Catalogue of English Dictionaries. In 1898 appeared the *Webster's Collegiate Dictionary* (an 8vo abridgment from the *International*), which underwent radical revision, based upon the *New English Dictionary* mentioned below, and was published again in 1913. In its present form the octavo Webster is perhaps the most reliable small dictionary in the English language. In 1889-95 appeared the *Century Dictionary*, an encyclopedic English lexicon of 7046 pages, based upon *Ogilvie's Imperial Dictionary* (mentioned below) and prepared under the direction of Dr. W. D. Whitney, together with an added *Dictionary of Proper Names* of 1085 pages, edited by B. E. Smith, and geographical atlas. This was revised and published together, under the editorship of B. E. Smith, in 1911. A small, one-volume *Century Dictionary*, based upon the larger work and thoroughly compared with the great Oxford dictionary, is to be published. In 1893-95 appeared the large one-volume (2 vols. when first published) *Standard Dictionary of the English Language*, under the editorship of Isaac K. Funk and Francis A. March. This has been thoroughly revised for the new edition, published in 1913. The great work, *A New English Dictionary on Historical Principles*, founded mainly on material accumulated by the English (British) Philological Society, was at first edited by James A. H. Murray, but later there have been associated with him Henry Bradley and W. A. Craigie. It is the greatest of all dictionaries in its fullness of illustration by citations and elaborate analysis of the meanings and etymologies of the words treated. The great scope and scholarship of this work is such that, although begun in 1884, it is still uncompleted—the letters T and S. being done simultaneously under separate editorships, were in 1914 still unfinished; in July the work was practically completed to the letter U. It is strongest in literary and ety-

mological matters and covers systematically the period from 1200 A.D. to date.

There are many dictionaries on special subjects, and their number is rapidly increasing, both in English and in many of the foreign languages. Some of the more important special dictionaries in English are: **ARCHITECTURE AND BUILDING**—Sturgis, *Dictionary of Architecture and Building* (3 vols., 1901-02). **BIBLE**—*Dictionary of the Bible*, by James Hastings (5 vols., 1898-1904); T. K. Cheyne and J. S. Black, *Encyclopaedia Biblica* (4 vols., 1900-03). **BIOGRAPHY**—Appendices to *Webster's International Dictionary*, *Standard Dictionary*, and *Century Dictionary*; Stephen (1885-91) and Lee (1891-1901), *Dictionary of National Biography* (66 vols., 8vo, including 3 supplementary vols., London, 1885-1901), and *Index and Epitome* of this (ib., 1903; 2d ed., 1906)—a new edition of this monumental work was published in 22 volumes (ib., 1908-09), with a new *Index and Epitome* (ib., 1913); Adams, *Dictionary of American Authors* (New York, 1898; 5th ed., revised and enlarged, ib., 1905); *Who's Who: Who's Who in America*; in German, *Wer Ist's* (these last three being revised annually); Thomas, *Universal Pronouncing Dictionary of Biography and Mythology* (new 3d ed., Philadelphia, 1910). **BIRDS**—Newton and Gadow, *Dictionary of Birds* (new ed., 1899). **CHEMICALS AND CHEMISTRY—(i. H. Hurst, *Dictionary of Chemicals and Raw Products Used in Manufacture of Paints, etc.* (1901); A. I. Cohn, *Dictionary of Tests and Reagents* (1903); Watts, *Dictionary of Chemistry* (4 vols., 2d ed., 1888-94); Thorpe, *Dictionary of Applied Chemistry* (new ed., 5 vols., New York, 1912-13); Rawson, Gardner, and Laycock, *Dictionary of Dyes and mordants* (1901). **DIALECTS**—Wright, *The English Dialect Dictionary* (1898-1905), including a grammar of English dialects (a quarto work in 6 large vols.). This, like the Oxford *New English Dictionary*, is the most complete dictionary of its kind ever published. It is founded on the publications of the English Dialect Society and a large amount of new material gathered from new contributors and voluntary readers throughout Great Britain and Ireland. It contains a very complete vocabulary of all dialect words or senses now in use or known to have been in use since the beginning of the eighteenth century, with copious illustrative citations. Then there are also Bartlett, *Dictionary of Americanisms* (4th ed., revised and enlarged, Boston, 1896); Farmer, *Americanisms, Old and New* (New York, 1899), the latter very incomplete. **ECCLIASTICAL SUBJECTS**—Addis and Arnold, *A Catholic Dictionary* (6th ed., London, 1903); Hook, *A Church Dictionary* (15th ed., London, 1896). **GEOGRAPHY AND PLACE NAMES**—Heilprin, *Lippincott's Gazetteer of the World* (2d ed., large 8vo., Philadelphia, 1906; supp., 1911); Chisholm, *Times* (London) *Gazetteer* (reissue, ib., 1906); Blackie, *Dictionary of Place Names*, with derivations (ib., 1887). **HISTORY, ETC.**—Haydn, *Dictionary of Dates* (25th ed., New York, 1911); *Dictionary of Races and Peoples* (Washington, 1907). **MEDICAL**—Gould, *Illustrated Dictionary of Medicine* (6th ed., New York, 1910); Dunglison (ed.), *Dictionary of Medical Science* (23d ed., ib., 1903); Harris, *Dictionary of Dentistry* (6th ed., ib., 1899). **MUSIC**—L. C. Elson, *A Dictionary of Music* (Boston, 1905); Grove, *Dictionary of Music* (revised ed., 5 vols., New York, 1904-10). **MYTHOLOGY**—Harper's *Dic-***

tionary of Classical Literature and Antiquities (New York, 1898); J. Dawson, *Dictionary of Hindu Mythology, etc.* (London, 1903). MILITARY AND NAVAL.—J. P. Wisser and H. C. Gauss, *A Military and Naval Dictionary* (New York, 1905). NEEDLEWORK.—Caulfield and Saward, *Dictionary of Needlework* (London, 1885). PHILOSOPHY AND PSYCHOLOGY.—Baldwin, *Dictionary of Philosophy and Psychology* (new ed., 3 vols., New York, 1911); in French, Pierre Nova, *Dictionnaire de terminologie scolastique* (Paris, 1885; out of print). ECONOMICS.—Palgrave (ed.), *Dictionary of Political Economy* (revised ed., London, 1910). PROPER NAMES IN FICTION, HISTORY, ETC.—Harbottle, *Dictionary of Historic Allusions* (2d ed., London, 1904). QUOTATIONS.—Dalbiac, *Dictionary of German Quotations* (London, 1906); Harbottle and Dalbiac, *Dictionary of French and Italian Quotations* (2d ed., ib., 1904); Harbottle, *Dictionary of Classical Quotations* (3d ed., New York, 1906); Harbottle and Hume, *Dictionary of Spanish Quotations* (ib., 1907). SLANG.—Barrère, Albert, and Leland (eds.), *Dictionary of Slang, Jargon, and Cant* (London, 1907); Farmer and Henley, *Dictionary of Slang and Colloquial English* (ib., 1905). This is a one-volume abridgment of the larger work *Slang and its Analogues*, edited at first by John S. Farmer, later by him and W. E. Henley, as joint editors, containing many illustrative citations (7 vols., 1890-1904). SYNONYMS.—Crabb, *English Synonyms* (1st ed., London, 1816). This work contains a considerable body of selected citations and has extended discriminations between words that are more or less synonymous. It has passed through many editions practically unchanged and, though not a scholarly work, is still perhaps the best book of the kind for English synonyms. Based upon and largely taken from it, is Smith's *Synonyms Discriminated* (London, 1882), a book of the same general character. Other dictionaries of synonyms, without citations and consisting essentially of mere lists of words more or less related in meaning, are: Roget, *Thesaurus of English Words and Phrases Classified* (1st ed., London, 1852; new editions, enlarged and improved, have appeared in 1911 and 1913, both containing a full index by J. L. Roget)—this is considered by many a more discriminating and hence more helpful work than even Crabb's; Soule, *Dictionary of English Synonyms* (New York, 1871, 1891, 1910, 1911); Fernald, *English Synonyms and Antonyms* (1896, 1906); Fleming, *Synonyms, Antonyms, and Associated Words* (ib., 1913). The best treatments of English synonyms at present are those contained in the larger dictionaries (the *International*, the *Standard*, and the *Century* dictionaries). TECHNOLOGICAL.—Goodchild and Tweney, *Technological and Scientific Dictionary* (London, 1905).

The best dictionaries from English into foreign languages and vice versa, and the dictionaries entirely in foreign languages will be found in the bibliographies given under the various special articles in this ENCYCLOPEDIA; thus, under the article PORTUGUESE LANGUAGE will be found a list of the best native and bilingual dictionaries of Portuguese; and the case is similar with other like articles, such as SPANISH LANGUAGE, ITALIAN LANGUAGE, ETC. Several really great foreign dictionaries should be mentioned here, however. Among these is the great German dictionary, *Deutsches Wörterbuch*, of Jacob and Wilhelm Grimm, begun in 1852, of which the first volume

was published in 1854. It aims to give the words only of the literary language (being far less full than the *New English Dictionary*), from the beginning of the sixteenth century. Since the death of the Grimm Brothers the work has been carried on by other scholars. The work is now (1914) about five-sixths completed. Among the monumental French dictionaries we have *Dictionnaire de la langue française*, by M. P. E. Littré, a large quarto rich in literary citations and the history of French words, published in Paris in 1863-72 (a supplement in 1878-82); and the grand *Dictionnaire universelle du XIXème siècle* (15 vols., 4to) of Larousse, published at Paris in 1866-76. This is perhaps more properly an encyclopædia, since it contains essays of some length on various subjects. The revised edition, published in 7 volumes under the title *Nouveau Larousse illustré* (Paris, 1898-1904; supplement, 1907), and under the editorship of Claude Augé, contains less discursive matter, but a greater variety of articles covering the entire field of knowledge—all in one general vocabulary—combining fiction, history, biography, geography, dictionary of words, etc.

Among the modern dictionaries in two or more languages, those treating of technical terms are of special interest. There are now numerous dictionaries of this class, many of them having a vocabulary in three languages, commonly German, French, and English. Their definitions are usually merely by synonyms or the briefest kind of description, their purpose being to meet the needs of the technological or scientific student. A recent dictionary of this class is the *Technological Dictionary*, edited by Alexander Tolhausen, published in 1901 at Leipzig, in three thick duodecimo volumes. The vocabulary is in German, French, and English respectively in the three volumes.

The form and contents of the modern dictionaries are the outcome of long experience. The first dictionaries were mere word lists arranged according to subjects or even miscellaneous. The alphabetic arrangement is comparatively recent and has entirely replaced the older ones. The plan of giving scientific etymologies and of arranging definitions in the order of their historic development, both now typical of the best dictionaries, first began to take definite shape in the work of Noah Webster. The use of illustrations in dictionaries is old, but heretofore only those illustrating the mechanical arts were generally dependable for scientific accuracy. The general and free use of illustration of animals and plants with a reasonable approach to accuracy dates from the publication (about 1850) in England of a revision of *Webster's Dictionary* under the name of *Ogilvie's Imperial Dictionary*. This was well and copiously illustrated, many of its illustrations still finding a place in the standard dictionaries of to-day. The most notable general English dictionary with illustrations prior to Ogilvie's was that entitled *Dictionary of Arts and Sciences* (2 vols., 4to, London, 1806) by G. Gregory. The work is profusely illustrated with steel engravings of the arts and sciences and natural history and combines the features of a dictionary and an encyclopædia. The illustrations in natural history, however, lack the scientific accuracy characteristic of modern dictionaries and encyclopædias. The dictionary of to-day is distinguished also by being no longer a one-man work, as in the days of Johnson and

Webster, but a coöperative product, engaging the services of many special and general editors working under a chief of staff, or managing editor, the whole work being subject to the direction of an editor in chief, who endeavors to give it unity, uniformity, and completeness.

DICTOGRAPH. This instrument, which has figured in many criminal trials since 1912, consists of the adoption of an ordinary telephone circuit with a sensitive granular carbon transmitter with a diaphragm somewhat greater than usually employed, so as to increase the reproduction of the sound at the receiving end of the line. Such a transmitter, small and inconspicuous, could be placed in the room where suspected persons would hold conference or conversations, and wires led to a recording station, where a stenographer could record the spoken words. In large auditoriums a number of transmitters have been used to reproduce the sounds at different parts of the hall, and a similar device with a loud-speaking telephone receiver has been installed in the waiting rooms of various railway stations.

DICTUM (Lat., a saying, utterance, response of an oracle), sometimes called *obiter dictum*, i.e., an opinion pronounced 'by the way.' In legal parlance, an unauthorized expression of opinion on a point of law uttered by a judge in a judicial proceeding. In a legal system based, as is that of England and America, largely upon precedent, only so much of a judicial opinion as is directly concerned with the decision of the case in hand has commanding authority. This is due to the fact that the courts have no power to decide cases not before them for adjudication. The principle of *stare decisis*, i.e., of abiding by a rule once settled by a formal decision, invests such a decision with the force of law and makes it a binding authority upon the courts in similar cases. But a decision upon a collateral point, or upon a state of facts not before the court for its determination, has no such binding force. It is a mere pronouncement, or expression of opinion, which derives its authority solely from the learning and personal weight of the judge declaring it. It is usual, therefore, to distinguish between the "law of a case" and the dicta, or judicial opinions expressed in it, which, however important and influential they may be, have not the force of law. This process of "sifting" the law from the dicta of a judicial opinion is one of the chief, as it is one of the most difficult, functions of the lawyer and the judge.

It is not to be inferred, however, that judicial dicta are entirely without legal authority. The opinions of eminent and learned judges have the same weight with the courts as that which attaches to the disinterested opinions of great lawyers and legal writers, and are classified as having "persuasive" as distinguished from "imperative" authority. It is often desirable and sometimes necessary to resort to such opinions as an aid to the formation of a sound though independent judgment upon a question of law, and many cases have been decided and many important legal doctrines established in deference to such authority. In this view of the matter judicial dicta constitute a long and valuable series of commentaries on the law of the land, scattered through the law reports, to which resort may be had as to the more systematic writings of eminent lawyers and judges, as those of Coke, Blackstone, Kent, and Story.

Consult Wambaugh, *The Study of Cases* (2d ed., Boston, 1894). See JUDGMENT; OPINION.

DICTUM OF KENILWORTH. An agreement between Henry III and the rebellious barons, so called because made during the siege of Kenilworth in 1266.

DICTYNIDE (Neo-Lat. nom. pl., from Gk. *δίκτυον*, *diktyon*, net + *εἶδος*, *eidos*, form). A family of spiders that weave irregular webs in which two kinds of silk are used. See SPINER.

DICTYONEMA (Neo-Lat., from Gk. *δίκτυον*, *diktyon*, net + *νῆμα*, *nēma*, thread). A genus of fossil graptolites in which the colony, when found pressed out on the surface of a slab of shale, has the appearance of a network of delicate filaments made up of heavier cell-bearing branches that radiate from a common base and are united at frequent intervals by slender horizontal threads. The genus ranges from the uppermost Cambrian to the Carboniferous and is especially abundant in lowest Ordovician "Dictyonema shales" which form such a persistent zone in the Baltic Provinces, Scandinavia, England, eastern Canada and New York. *Dictyonema flabelliforme*, the best-known species, had a colony 5 to 10 inches long that grew in the shape of a funnel from a single rootstock. See GRAPTOLITE.

DICTYOSPONGIDÆ (Neo-Lat. nom. pl., from Gk. *δίκτυον*, *diktyon*, net + *σπόγγος*, *spongos*, sponge). A family of usually large, fossil lysacine sponges somewhat closely allied to the existing glass sponges (*Euplectella*), and found in rocks of Lower Devonian to Lower Carboniferous age, but chiefly in those of Upper Devonian age in New York State. In form these sponges vary from ovate, cylindrical, and prismatic to funnel-shaped. They have a large central cavity, and thin walls in which the siliceous spicules formed a skeleton of great regularity, so that the surface of the fossil is ornamented by a network of fine rectangular meshes. As the sponge substance itself was decomposed and the siliceous spicules dissolved during the processes of fossilization, these organisms appear at present as casts of the original organic matter, imbedded in shaly sandstones, and their structure is indicated by the impressed lines upon their surfaces, and in some cases by the iron oxide (limonite) which occupies the cavities once filled by organic tissue or spicules. Some of these sponges have very simple form with smooth surface; others are radially or transversely ribbed, and still others are spiny or nodulose, while a few have pouched nodes upon their surfaces.

In the region where these fossil sponges have been found in greatest abundance—viz., in Allegany, Cattaraugus, and Steuben counties of New York State—they occur in sandy shales or sandstones in such manner as to indicate that they lived often in extensive colonies on sandy or muddy bottoms, and they are not as a rule associated with any considerable number of other kinds of fossil organisms. The earliest species, *Dictyospongia Danbyi*, from the Upper Ludlow rocks of England, has a simple, sub-ovate form. The more ornamented forms appear in the Upper Devonian and Lower Carboniferous rocks. The principal genera are *Dictyospongia*, *Uphantania*, *Hydnoceras*, *Prismodictya*, and *Thysanodictya* of the Chemung rocks, and *Phragmodictya* and *Physospongia* of the Keokuk group of Lower Carboniferous age. About 200 species are known, of which number scarcely

more than half a dozen are European. An elegant monograph, with fine lithographic plates of these fossil sponges, was published by James Hall and J. M. Clarke as "A Memoir on the Paleozoic Reticulate Sponges of the Family Dictyospongiada," in *Memoirs of the New York State Museum of Natural History*, vol. ii (Albany, 1898). See SPONGE; SPONGIOZOA.

DICTYOTALES. A small group of marine algae of very uncertain affinities. They are chiefly interesting on account of the combination of characters. They have a brown pigment characteristic of the brown algae, tetraspores characteristic of the red algae, and sperms peculiar to themselves. In general, they are regarded as an aberrant group of red algae.

DICTYUS (Lat., from Gk. *Δικτυς*, *Diktys*) or **CRETE.** A Greek writer. He was supposed to have been a companion of Idomeneus in the Trojan War, of which he wrote an account. The Latin version (dating from the fourth century A.D.) of this fabulous history was long alone extant. The Greek original was used by Malalas in his chronography (c.570 A.D.) and by other Byzantine writers. A fragment of the version on a papyrus of the third century A.D. was found by Grenfell and Hunt in 1904-05 and published in the *Tebtunis Papyri*, 2 (1907). The prologue of the Latin version and Suidas (q.v.) inform us that the original work of Dictys was written in Phœnician letters on bark and buried with him at Cnosus, in Crete, but that in the thirteenth year of Nero's reign (66 A.D.) the tomb was burst by an earthquake and the Phœnician book thus discovered. This was then presented to Nero, who ordered it translated into Greek. The Latin version bears the name of one Septimius as its author and conforms closely to the newly discovered Greek version. The work belongs to the body of fictitious literature which began to be written in the Hellenistic period. In the Middle Ages it was much read and, with the spurious history of Dares the Phrygian (q.v.), became the source of romance. Consult: Griffin, *Dares and Dictys: Introduction to the Study of the Medieval Versions of the Story of Troy* (Baltimore, 1907); Christ-Schmid, *Geschichte der griechischen Litteratur*, vol. ii (5th ed., Munich, 1913). For the text, in both Latin and Greek, consult Ihm, in *Hermes*, 44 (1909).

DICYCLIC PLANTS. See BIENIALS.

DICYNODON, di-si'nô-dôn (Neo-Lat., from Gk. *δίς*, *di*, double + *κνών*, *knôn*, dog + *ὄδους*, *odous*, tooth). A genus of fossil reptiles found in the Permian and Jurassic rocks of South Africa and Russia, while closely allied forms occur in India and Scotland. The animal was a land reptile of heavy build, with limbs constructed for walking with the body well raised off the ground. Some forms are as small as a rat, but the majority of the species vary in size from that of a new-born to a half-grown pig. A few only are of large size, the largest known having a skull about 2 feet in length. In most points of structure the animal closely agrees with the mammals, having the temporal arch similarly built and having a mammal-like shoulder girdle and pelvis and the same number of joints in the toes, viz., 2, 3, 3, 3, 3. The striking specialization from which its name is derived is the presence of a pair of large canines which often form walrus-like tusks. In most species these are absent in the female. The front of the jaws is covered

with a horny beak like that of a tortoise. In an allied genus *Endothiodon*, there are no tusks, but a row of small molar teeth. See THEROMORPHA.

DIDACHE, did'a-kâ. See TEACHING OF THE TWELVE APOSTLES.

DIDACTIC POETRY. That kind of poetry which aims, or seems to aim, at instruction as its object, making pleasure entirely subservient to this. It has been disputed whether the existence of a kind of poetry especially entitled to the name "didactic" consists with the true nature and object of the poetic art, for it is held that to point out instruction as the peculiar object of one kind of poetry is to overlook the high aim of all poetry, and that a poem may be in the highest sense ethical without any obvious aim at instruction. The drama of Shakespeare has an immense ethical or moral value, but it is not didactic. Examples of purely didactic poetry are Vergil's *Georgics*, Horace's *Ars Poetica*, Pope's *Essay on Criticism* and *Essay on Man*.

DIDELPHIA (Neo-Lat., from Gk. *δίς*, *di*, double + *δελφύς*, *delphys*, womb), or **METATHERIA.** The second of the three great subclasses of mammals (q.v.), containing only the single order Marsupialia (q.v.). The name is derived from the "double" condition of the womb in the female, where the uterine dilations of the oviducts continue through life distinct from each other. There are also two vaginæ, each with its own opening into the cloaca, into which the rectum and ureters likewise open. There is no well-developed placenta, and it is generally entirely wanting, though it is now thought that its absence is a secondary condition and not primitive, as it has been shown to be present in the early stages of development in the bandicoots (Perameles).

DIDEROT, dé'd'rô', DENIS (1713-84). One of the most brilliant, versatile, and prolific writers of the French "philosophic" generation, nicknamed "Pantophile Diderot" by Voltaire, because of his unbounded interest in almost every branch of human activity. He was born at Langres, Oct. 5, 1713, and was educated by the Jesuits. He declined to study law, quarreled with his family, and eked out a meagre livelihood in young manhood by literary hack work and teaching mathematics. After several discreditable Bohemian adventures he married (1743) and became definitely estranged from his father. In this year he published translations of Stanyan's *History of Greece*, and in 1746 a translation of James's *Dictionary of Medicine*, with an *Essai sur le mérite et la vertu*, a paraphrase of Shaftesbury. The *Pensées philosophiques* of this year was his first independent work and is said to have been inspired by a caprice of his mistress, Madame de Puisieux, who certainly prompted his anonymous and most indecent novel, *Les bijoux indiscrets* (1748), of which he was ashamed in his later years. Diderot's first work of philosophic importance is the *Lettre sur les aveugles à l'usage de ceux qui voient* (1748), which, though apparently a hypothetical study of the philosophy of sensation, really involved an undermining of ethical standards and so of social order. This essay abounds in strange provisions of later discoveries and hypotheses, such as the suggestion of developing the sense of touch among the blind. Its immediate result was the imprisonment of its author at Vincennes be-

cause a passage in it offended a lady of great though unavowable influence. From imprisonment Diderot was released at the urgency of the publishers who had undertaken to bring out the famous *Encyclopédie*, originally conceived by Diderot as an enlargement of *Chambers's Encyclopaedia* (1727), but becoming, under his editorship and for a time that of D'Alembert, the organ of intellectual emancipation rather than of any school of ethics or philosophy. To this Diderot gave 20 years of unremitting labor, writing, revising, editing, correcting, supervising, and combating the intrigues and threats of theological opponents and the prohibitions of a censorship that, fortunately for his publishers, was venal as well as corrupt. The *Encyclopédie* counts 28 volumes (1751-72), with a six-volume supplement (1776-77) and two volumes of tables (1780). It was not primarily or chiefly revolutionary, but practical. All branches of science, manufacture, and agriculture were treated with great fullness. It is only occasionally, and then often by mocking insinuation rather than direct attack, that it touches religion or morals, in which it has no consistent theory to uphold. The attacks on legal abuses and feudal survivals are quite as marked a feature. The work was greeted with immense enthusiasm and was reprinted several times. Though engaged in this Herculean work, Diderot managed, with characteristic superabundance of energy and bigness of heart, to help his literary comrades, when he did not actually rewrite their works entirely for them, and even composed two plays—*Le fils naturel* (1757) and *Le père de famille* (1758)—that mark the beginning of the modern domestic drama, and by his critical *Paradoxe sur le comédien* had great influence on Lessing and so on the German stage. The French classic tragedy had confined itself to "noble" themes. Diderot took his tragic situations from everyday middle-class life, thus sowing the germs of the melodrama in France. To this period belong also an essay on painting in the *Encyclopédie*, which Goethe translated, adding a luminous commentary; his posthumously published novel, *La religieuse* (1759); the eccentric *Jacques le fataliste* (1773), also posthumous; and the yet more eccentric *Le neveu de Rameau*, which first appeared in print in a translation by Goethe (1805). In his critiques on the annual exhibition of painting, the famous Salon, Diderot established the first bond between art and literature; still he can hardly be considered an art critic, owing to his ignorance of its technique and his undue insistence on the mere subject or idea of the work. In 1773 Diderot, who had received but \$600 a year for his work on the *Encyclopédie*, felt constrained to sell his library to furnish a suitable dowry for his daughter. It was purchased by Catharine II and presented to him as salaried caretaker. He went to St. Petersburg to thank the Empress and spent some months there in her intimate society. He returned in 1774 and passed his last decade in ephemeral writing and conversations that, full of powerfully stimulating ideas as they were, left lasting impressions. In talk his contemporaries thought him unrivaled; this is borne out by the fact that his influence on his contemporaries was tremendous, even though most of his really original compositions were published after his death. "He who knows Diderot in his writings only," said Marmontel, "does not know

him at all." He worked and talked with disinterested enthusiasm, greeting the mention of a collected edition of his writings with laughter, so well did he know the reckless haste of their composition. A certain sentimental strain infused into him by the works of Sterne and Richardson, his own sincere appreciation of nature, and his natural though unselfish lyricism, easily mark him as a precursor of the Romanticists, even ahead of Rousseau in point of time. His works have been well edited by Assezat and Tourneux (20 vols., 1875-79). Diderot's *Correspondence* with Mademoiselle Voland gives the best clue to his antithetical character. The best study, in English, of his place, environment, and influence is John Morley, *Diderot and the Encyclopedists* (London, 1891). Consult also: Rosenkranz, *Diderot's Leben und Werke* (Leipzig, 1866); Brunetière, *Etudes critiques* (2d series, Paris, 1881); Carlyle, *Essay on Diderot* (London, 1881); G. Lawson, *Histoire de la littérature française* (Paris, 1912); A. Collignon, *Diderot* (ib., 1907); A. Tornézy, *La légende des philosophes* (ib., 1911); R. L. Cru, *Diderot as a Disciple of English Thought* (New York, 1913).

DIDIER, d'èdyà', JEAN CHARLES HENRY (1805-64). A French writer, born in Geneva. After a visit to Italy he published his *Rome souterraine* (1833), a work of fiction which affords a brilliant picture of the revolt against Austria and other matters of Italian history. He wrote: *Une année en Espagne* (1837); *Campagne de Rome* (1842); *Promenade au Maroc* (1844); *Séjour chez le schérif de La Mecque* (1856); *Cinquante jours sur le Nil* (1857); *Cinq cents lieues sur le Nil* (1858).

DIDION, d'èdyòn', ISIDORE (1798-1878). A French soldier and author, born at Diedenhofen. He was educated at the Ecole Polytechnique and the Academy of Metz; in 1848 was appointed director of the percussion-cap manufactory of the French army in Paris. In 1858 he became a general of brigade. He wrote on the science of projectiles, including *Traité de balistique* (1848; 2d ed., 1860); *Cours élémentaire de balistique* (1864; 3d ed., 1859); *Progress des sciences et de l'industrie* (1875).

DIDIUS SALVIUS JULIANUS, MARCUS. A Roman emperor, March to June, 193. He had commanded the army in Germany and held high military and civil posts in Italy and the provinces, and been named consul more than once. On the murder of Pertinax in 193, the praetorian soldiers offered to support as emperor whoever would give them the largest price. Didius gave them 25,000 sesterces each and gained the throne, but was soon deposed by the Senate on the approach of Septimius Severus, and murdered by a soldier.

DIDO (Lat. from Gk. Διδώ), or ELISSA. According to the legend, the founder of Carthage. She was the daughter of a king of Tyre, called by some Agenor or Belus, by others Mutoz or Matgenus. His successor, Pygmalion, the brother of Dido, murdered her husband (who was also her uncle), a priest of Hercules named Acerbas or Sicharbas, called Sycheus by Vergil. With the treasures of Sycheus, which Pygmalion had sought for in vain, and accompanied by many Tyrians, Dido escaped to sea. She landed in Africa, not far from the Phœnician colony of Utica, and built a citadel called Byrsa (a Phœnician word, confused with Gk. βύρρα, the hide of a bull), on a piece of ground

which she had bought from the Numidian King, Iarbas. The meaning of the word "Byrsa" gave rise to the legend that Dido purchased as much land as could be encompassed with a bullock's hide, and that after the agreement she cut the hide into small thongs and thus inclosed a large piece of territory. Here she built the city of Carthage. To avoid being compelled to marry Iarbas, she stabbed herself on a funeral pile, which she had caused to be erected (consult Justinus, xviii, 4-7); after her death she was honored as a deity by her subjects. Vergil, however, ascribes the death of Dido to her unrequited passion for Aeneas (*Aeneid*, i-iv, especially iv); but many of the ancient writers conceived that the poet had committed an anachronism in making her contemporary with the Trojan prince. The more general opinion was that Dido had built Carthage somewhere between 50 and 100 years before the foundation of Rome. Consult Meltzer, *Geschichte der Carthager*, vol. i (Berlin, 1879), and his article "Dido," in Roscher's *Lexikon der griechischen und römischen Mythologie*, vol. i (Leipzig, 1884-90), and Rosbach's article "Dido," in Pauly-Wisowa, *Real-Encyclopädie der classischen Altertumswissenschaft*, vol. v (Stuttgart, 1905).

DIDON, dā'dōn', JEAN HENRI (1840-1900). A French Dominican who in the latter half of his life stood in the front rank of French pulpit orators. He was born at Touvet, entered the Order of St. Dominic in 1862, and during several years preached a famous series of Lenten conferences at Notre Dame in Paris. He died at Toulouse, March 13, 1900. Of his publications there have been translated into English: *Science Without God* (1882); *The Germans* (1884); *Jesus Christ* (2 vols., 1891-92); *Belief in the Divinity of Jesus Christ* (1894). Lives have appeared by De Coulanges (Paris, 1901); Reynaud (ib., 1904), and Brissson (ib., 1905).

DIDOT, dā'dō'. The name of a family of French printers and publishers founded by FRANÇOIS DIDOT (1689-1757).—Of his eleven children, FRANÇOIS AMBROISE (1730-1804), who introduced the vellum paper into France, and PIERRE FRANÇOIS (1732-95) were distinguished printers, and the latter's eldest son, HENRI (1765-1852), was a noted type caster, engraver, and mechanician. A descendant of Pierre married Bernardin de Saint-Pierre, who wrote *Paul et Virginie* at a country house near the Didot paper manufactory at Essonne.—PIERRE DIDOT (1760-1853), the eldest son of François Ambroise, produced then unexcelled editions of French and Latin classics; his brother, FIRMIN (1764-1836), was greatest of them all as printer, engraver, and type founder. He invented the word "stereotype," and used the process largely, revolutionizing the book trade by his cheap editions. His manufactory was a place of pilgrimage for the printers of the world. He was also a respectable dramatic author and translator of the classics and achieved reputation as a moderately liberal politician and deputy. His sons and grandsons have continued the business with honor, but with no increase of fame. France is indebted to this family for the publication of the *Biographie Nationale*, and Belgium is likewise for the establishment of her Royal Press. Consult

E. Werdet, *Études biographiques sur la famille des Didot* (Paris, 1864), and Alfred Cecil Piper, "Some Great Printers and their Work: the Didots," in *Library World* (London, 1914).

DIDRON, dē'drōn', ADOLPHE NAPOLEON (1806-67). A French archaeologist, born at Hautevillers (Marne). Acting on the advice of Victor Hugo, he turned his attention to Christian archaeology, examined nearly all the old church edifices of France, and extended his knowledge by travels in Greece, Germany, England, and Italy. In 1835 he was appointed secretary to the Historical Committee of Arts and Monuments, founded by Guizot, and in 1844 he established the *Annales Archéologiques*, which became the main source of information in France on mediæval art and antiquities, and was edited by him until his death. He founded a special publishing house for archaeological works in 1845, and established a manufactory of stained glass in 1849, and one for bronzes and goldsmith's ware in mediæval style in 1858. Among his works are: *Histoire de Dieu: iconographie des personnes divines* (1843); *Manuel d'iconographie chrétienne, grecque et latine* (1845); *Manuel des objets de bronze et d'orfèvrerie du moyen âge: Iconographie de l'opéra* (1864).

DIDSBURY COLLEGE. One of the theological institutions maintained by the Wesleyan church of England. It is situated near Manchester. It was founded in 1842-43 as the result in part of the effort made in 1839 to raise a large fund to commemorate the centenary of the founding of Methodism. Among the many noted men who have been members of its faculty are to be numbered W. B. Pope, the distinguished theologian, and Professor Geden, the learned biblical scholar. It has always been noted for the strength of its faculty and the quality of its work.

DIDUN/CULUS (Neo-Lat., diminutive of *didus*, from Portug. *doudo*, dodo, foolish). A genus of a family (Didunculidae) of pigeons, peculiar to Samoa and characterized by a hooked upper mandible and a toothed lower one—the tooth-billed pigeons. See PIGEON.

DIDYMA. See BRANCHIDÆ.

DIDYMI, or **DIDYMOI**. See BRANCHIDÆ.

DIDYMIUM (Neo-Lat., from Gk. *δίδυμος*, *didymos*, twin, from *δι-*, *di-*, double + *δῶς*, *dōs* two; so called from being found in the same mineral which yields lanthanum). A metal discovered in 1842 by Mosander, in the mineral cerite. It is also found in gadolinite, orthite, and other cerium minerals. Recent investigations have shown that didymium consists of two elements, *neodymium* (symbol Nd, atomic weight 143.6), and *praseodymium* (symbol Pr, atomic weight 140.5).

DIDYMOGRAPTUS (Neo-Lat., from Gk. *δίδυμος*, *didymos*, double + *γράφω*, *grapho*, I write). A genus of graptolites, of which the rhabdosome consists of four symmetric branches growing from an axillary sicula. The thecae are simple and tubular. The genus furnishes important index fossils for the Ordovician and contains about 40 species, found abundantly in the graptolite shales of the lower and middle Ordovician in Europe, America, and Australia. Some species, as *Didymograptus bifidus* and *Didymograptus nitidus*, have a world-wide distribution. See GRAPTOLITE.

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